AMERICAN DENTAL ASSOCIATION

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Dental Abstracts

. . . . a selection of world dental literature

Lon W. Morrey, D.D.S., editor
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AMERICAN DENTAL ASSOCIATION

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Dental Abstracts has these purposes

1. To present a selection of pertinent literature representative of all points of view within the profession;

2. To provide, by a few hours' reading each month, a survey of the significant advances being made by dentistry throughout the world, as reflected in current dental literature; and

3. To supply enough data in each abstract so that the reader may determine whether he wishes to refer to the original article for more complete information.

The abstracts are grouped in broad classifications. The specialist will learn from this periodical of work done in other fields as well as in his own. The general practitioner will be able to keep abreast of modern knowledge in the various specialties. Articles from which abstracts have been made are on file in the Library of the American Dental Association and may be borrowed by members of the Association. Requests for articles should be addressed to the Bureau of Library and Indexing Service, American Dental Association, 222 East Superior Street, Chicago 11, Illinois. Only three articles may be borrowed at one time, and they may not be kept longer than one week. No charge is made to Association members for this service.

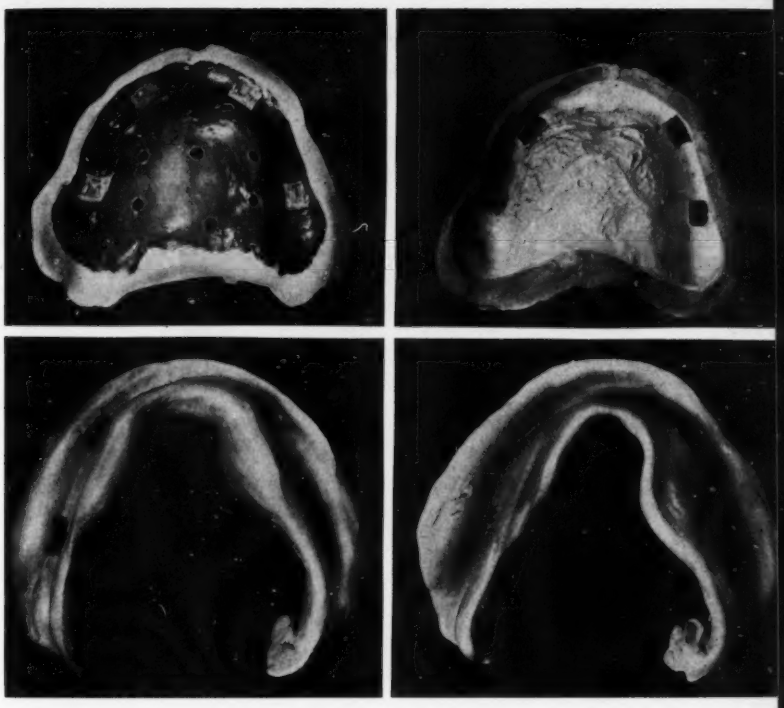


Figure 1 Above: Impression taking of the maxilla. Left: The perforated tray. Right: The clearly visible wax blocks. Below: Impression taking of the mandible. Left: The clearly visible wax blocks. Right: The finished impression

Two-paste impression technic for complete dentures

(Zwei-Pasten-Abdruckmethode für Totalprothesen)

G. J. Appenrodt, Jr. *Deut.Zahnärztebl.* 10:82-85 Feb. 8, 1956

The numerous advantages, technical and economical, of the two-paste impression technic for obtaining accurate impressions of edentulous mouths have induced many dentists to advocate its use, although little is known of the chemical reaction or the physical properties of the pastes used.

Usually, both a highly elastic paste and a free-flowing paste are carried to the mouth by means of rigid vulcanite trays. Small wax blocks, placed in the trays, permit the impression material to flow over the tissue without undue pressure or distortion of mucobuccal and mucolabial tissue.

The impression of the maxilla is taken as follows:

1. The vulcanite tray is filled with the highly elastic paste of creamy consistency and adapted to the mouth. The margins of the impression are muscle trimmed by adding warm soft modeling compound. The tray should be perforated.

2. The impression tray is filled with the free-flowing paste and returned to the mouth for the final impression. The cheeks and upper lip are moved slightly to aid in muscle trimming. Ice is used for chilling and hot air for drying of the impression material. The manufacturer's instructions in regard to mixing and length of time the material should remain in the mouth must be followed exactly.

3. The impression should be examined for air bubbles and distortions. The wax blocks should be visible on the surfaces of the impression. The models can be prepared at any time after the impressions are taken because impressions made of these pastes will retain their shape. The proper jaw relationship can be verified easily because the models will be exact duplicates of the patient's oral condition.

The impression of the mandible is taken as follows:

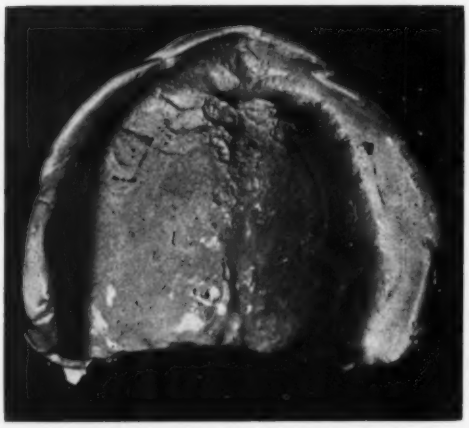


Figure 2 Faulty impression of the maxilla

1. The tray is held between two fingers while the impression material, consisting of a puttylike compound of both pastes, is vibrated to place. Before the material is chilled, the patient should be instructed to moisten his upper lip with the tip of the tongue, and to keep his mouth half open.

2. The impression is prepared with a soft mixture of both pastes which is spread thinly over the mucosurface of the vulcanite tray and immediately carried to the patient's mouth. No pressure is necessary. After setting, the impression is removed from the mouth quickly, washed with cold water and dried with blasts of hot air. To be acceptable, the impression must show clean-cut, sharp margins.

The two-paste impression technic, used in constructing complete dentures, obtains the maximum of fit and requires a minimum of adjustment. At no time does the patient experience the discomfort caused by hard pulling or pressure.

Pastes of zinc oxide-eugenol absorb the saliva coating, and record accurately the condition of the edentulous mouth. Pastes which contain alginates, acrylic resin or gums, however, are not suitable for the two-paste impression technic. The technic described is not a new method but rather a combination of a muscle-forming and a nonpressure impression technic.

Sequela to ill-fitting dentures: stomatopyrosis (Een hedendaags prothetisch euvel: stomatopyrose)

P. H. Buisman. *Tschr.tandheelk.* 63:602-609 Aug.-Sept. 1956

The syndrome of burning sensation and subjective pain in the anterior region of the palate, in certain parts of the mucous membrane, the jaws and the angles of the mouth, is termed by the author "stomatopyrosis."

At the Dental Clinic of the University of Utrecht, the Netherlands, serial examinations were made of patients complaining of having the symptoms of stomatopyrosis. The majority of complainants wore complete dentures, older women were mainly involved, and on the site of the subjective sensation or pain no pathologic alterations were visible.

In all instances, the patients blamed their denture for the uncomfortable condition even if these dentures had been worn for a comparatively long time.

Most of the complaining patients were women undergoing the menopause. This fact seems to suggest biologic and psychologic causes.

It was established that the majority of patients wore ill-fitting complete dentures and had "denture sore mouth."

In instances of alterations caused by ill-fitting dentures, the dentist usually examines the oral cavity for hyperemic lesions and pressure sores which, however, are not present in stomatopyrosis. Occasionally, the pressure of ill-fitting dentures causes atrophy in the region of the palatal rugae and in the adjacent mucous glands.

Spreng has assumed that stomatopyrosis is an allergic reaction to specific denture materials. This was contradicted by the author's observations because new dentures made of the same material did not cause the symptom complex of stomatopyrosis.

Landa has expressed the belief that stomatopyrosis is a purely psychosomatic reaction to newly inserted dentures. This hypothesis also could not be confirmed because stomatopyrosis occurred in persons who had worn their dentures for a long time.

Stomatopyrosis is caused by faulty occlusion of the dentures. The blood vessels and nerves in the region of the incisor foramen are continuously under pressure, thereby producing subjective but not objective symptoms.

The insertion of new and perfectly fitting and occluding dentures usually brings immediate relief.

Jutfaseweg 1, Utrecht, the Netherlands

Five years of experience in the use of immediate dentures

(Pjatiletnij opyt primenenija neposredstvennovo i rannevo metoda protezirovanija)

R. N. Akopova. *Stomat.,Moscow* 36:67 Jan.-Feb. 1957

Stomatologists disagree as to whether immediate dentures should be recommended. Observations were made in the Stomatological Polyclinic of Kislovodsk to investigate the influence of immediate dentures on the healing process after tooth extractions.

In a 14 month period, 62 immediate dentures were inserted. Twelve needed corrections.

In the period from 1950 to 1954, 254 prostheses were made for 202 patients, of whom 128 had from 1 to 3 teeth extracted, 54 had from 3 to 6 and 20 had from 7 to 11 removed. Before the removal of a larger number of teeth a therapeutist was consulted.

Success always resulted from carefully performed preprosthetic surgery, with preservation of as much tissue as possible. Also of great importance was the preparation of the cast. The dentist should avoid any carving of the linguogingival margin, trim only from the vestibular surface and reduce the alveolar ridge if necessary.

In all instances the denture should be inserted during the 48 hours after the performed operation and should remain undisturbed until the next visit in from two to three days.

Usually the patients had no complaints of pain or any discomfort. The tooth sockets were healing rapidly, and the alveolar ridges had formed a better denture foundation.

Sixty-eight patients have been followed, and only three dentures made in 1952 needed to be rebased by 1955.

▼ Partial dentures

Partial dentures

J. Osborne, N. Brills and G. A. Lammie. *Internat.D.J.* 7:26-53 March 1957

To the prosthodontist the physiology of the musculature is important, and muscle activity should have great influence on the planning and construction of partial dentures. For example, in a muscular person the elevators of the mandible are likely to be developed proportionately, and, in functional contraction, are able to exert a much greater stress on dentures than would be exerted in a person of slender build. Age, temperament and sex likewise influence muscle activity. The most significant development in the study of oral muscles has been the application of electromyography.

Occlusion changes during adult life by tooth loss, migration or tooth wear.

There is general agreement that stress applied to teeth in an axial direction is less damaging than stress applied horizontally, and that partial dentures should, whenever possible, be tooth supported.

Destructive changes of the mucosa and underlying bone may be caused by partial dentures. Possibly the most common destructive mechanism is movement of the denture which produces an inflammatory reaction in the soft tissues. This condition may spread to the underlying bone, and resorption may then occur.

The aim in partial denture construction is to maintain or restore the harmonious functioning of the musculature, occlusion and temporoman-

dibular joints; otherwise further breakdown of the stomatognathic system may occur.

Although the principle of stress-breaking is good theoretically, its practice is of limited or even doubtful value. Stress-broken dentures, particularly those with hinge joints, lack stability in a lateral direction and are unsatisfactory hygienically. They are expensive, may be easily distorted during use, and adjustments are frequent.

Free end saddles should be rebased at six-month intervals. Most patients are best served by dentures with rigid connection of the retainer units to the saddles; the type of clasp retention should be varied from the most rigid (short arm cast clasp) to the most flexible (long arm wrought wire) according to the assessment of the magnitude of muscle force, the type of occlusion and the supporting structures of the abutment teeth.

More studies are needed on the long-term clinical assessment of the effects of partial dentures on the oral mechanism.

University of Birmingham, Birmingham, England

▼

Crown and bridge

Thimble crowns (Thimble-kronor)

S. Linder. *Svensk tandläk.Tskr.* 49:793-797 Dec. 1956

Porcelain jacket crowns fulfill to a high degree esthetic as well as functional requirements. Porcelain also has been used to cover a metal substructure for a bridge in the anterior region in order to obtain a good esthetic result. Under certain limited conditions this so-called "thimble bridge" has given favorable results.

The following method of construction has been found to be most satisfactory: The abutment teeth are prepared as for jacket crowns, but with certain modifications. Since the tooth is to have a metal casing as well as a porcelain jacket, more substance must be removed. The requirement for parallel walls, necessary for jacket crowns, can be relaxed somewhat. The shoulder preparation must have a sharply defined right angle on the vestibular and vestibuloproximal part. On the lingual and linguoproximal part, however, the bevel preparation should be used.

A long dentinal stub with a gold enclosure would result in a thick and misshaped incisal edge. A better result is obtained by shortening the dentinal part and making the metal casing the desired length. A replacement part shaped like a preparation for a jacket crown is cast from the same material. The three pieces are joined by cervicoproximal solderings.

Three separate jacket crowns are made for this structure. On the finished bridge no metal is visible.

Structurally the thimble bridge is a relatively weak construction. Certain details must be observed to make the construction as strong as possible:

1. The pillar must be long enough to support the porcelain in central occlusion.

2. The proximal walls of the pillar must be as nearly parallel as possible to avoid a tendency for rotation.

3. The vestibular wall of the pillar longitudinally must be made as little convex as possible, since a curved layer of porcelain fractures easily.

4. The lingual wall of the pillar should have an indication of convexity at the tubercle.

5. For esthetic reasons the shoulders in the vestibular and vestibuloproximal part should be in the tooth substance. The remainder of the shoulder rests in the metal. The difference between the proximal and the vestibular and lingual shoulder level should be small, or the porcelain will easily fracture in these places. For the same reason the solderings also should be as close to the gingiva as possible.

Contact between the crowns must be avoided, as otherwise even a small "give" in the metal construction might result in fracture of one or more of the porcelain jackets; therefore, the proximal contacts of the crowns should be checked carefully before cementing.

Tandlakarhögskolan, Stockholm, Sweden

Periodontics and endodontics

▼

Periodontics

An ultrasonic method for root scalings: preliminary report

Paul J. Tascher and Sol J. Ewen. *New York D.J.* 23:266-269 June-July 1957

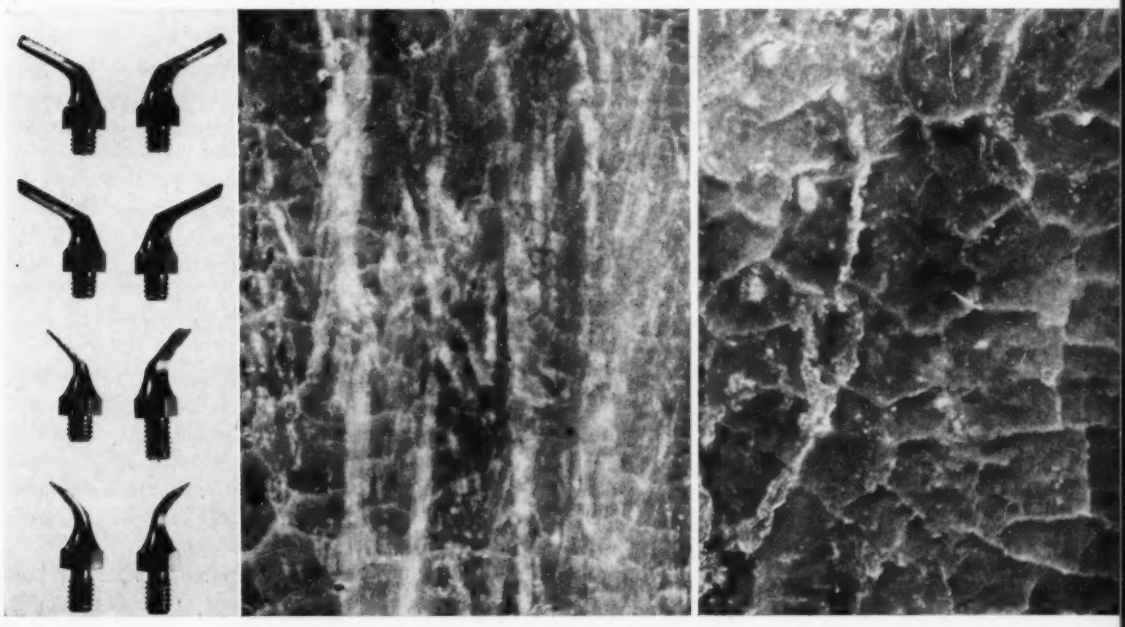
A method is described for dislodging calculus on the root surfaces of human teeth, through the employment of ultrasonic instruments with fluids with nascent gases.

The instrument used is a conventional ultrasonic power generator which delivers vibrational mechanical energy to tool tips. The cutting tool vibrates about 29,000 times a second with an amplitude of about 0.001 inch. Devices and materials include specially designed tool tips, a series of fluids commonly used as antiseptics and mouthwashes, and a device for delivering a regular flow of fluid to the cutting tips.

The tool tips in no way resemble the traditional periodontal scaler or curet. The new tips are able to enter easily between the gingiva and the tooth, are blunt so as to avoid injuring cementum, are contoured to produce an intimate contact with the convexity or concavity of the root surface, and are able to vibrate satisfactorily at angles off the vertical. The fluids used were: (1) water; (2) potassium permanganate in solutions of 1:1,000 and 1:5,000; (3) hydrogen peroxide in a solution of 1:10, and (4) sodium hypochlorite, a buffered solution in mouthwash strength (U.S.P. 1:25).

The fluid delivery setup consisted of a plastic container with an air relief valve. The bottle, containing fluid entrapped gas, was suspended like an intravenous feeding bottle on a stand at some height above the working area. One drop per second was delivered to the cutting tip. In this investigation the root surfaces of extracted teeth were scaled.

Left: New tips. Center: Tooth scaled with regular curets. Right: Tooth scaled with ultrasonic scaler



The calculus was rubbed gently with slow, regular strokes. The fluid flowed continuously over the cutting tips. At no time was positive pressure applied to the root surfaces. A fragmentation and dislodgment of the root surface accretions took place, leaving the surface visibly débrided of calculus.

All the four fluids adequately removed the calculus. The sodium hypochlorite solution appeared to accomplish the results most effectively.

When conventional root scaling instruments were applied by hand to clean and plane the cemental surfaces of roots, they left a series of fine scratches, lines and surfaces, observable in clinical photographs and under a magnifying lens. Similar examination of ultrasonically cleaned root surfaces reveals a rippled, satinlike surface.

The procedure described is now being used on dental patients and a further report will be published.

34 Forest Avenue, Glen Cove, Long Island, N. Y.

A social factor associated with the severity of periodontal disease

A. L. Russell. *Internat.A.D.Res.Preprinted Abst.* 17 March 21, 1957

The relative severity of periodontal disease in rural Indiana children was correlated with a series of social and economic findings from a census of the 25 counties in which the children resided. With all other factors held constant, a valid inverse relation was found between periodontal scores and median numbers of school years completed by rural adults in the counties. No relation was found between periodontal scores and median farm incomes, proportions of total county population classified as rural, and dentists per capita. This finding is based on presumptive evidence.

Similar analyses were carried out with adults of Boulder and Colorado Springs, Colo., for whom the number of school years individually completed had been recorded. In each group, with the influence of age held constant, a valid inverse relation was found between severity of periodontal disease and years of education. These analyses are based on direct evidence. The findings indicate that the severity of periodontal disease, once present, is conditioned by an undefined social factor which can be measured by individual or community levels of education. This social factor apparently plays no role in the initiation of disease. The theory that the true etiologic factors in periodontal disease may be independent of some or all of the factors which condition its severity, once present, may explain some apparent contradictions in the literature.

National Institute of Dental Research, Bethesda, Md.

Gingival tumors of pregnancy; review of "pregnancy tumors" and a report of two cases

Frank J. Zarka and Marvin M. Stark. *Obst.& Gynec.* 8:597-600 Nov. 1956

Although tumors of the gingivae occurring during pregnancy are not rare, many obstetricians are unaware of such lesions. Blum (1931) reported that pregnancy tumors occurred in the gingivae of 2 per cent of all pregnant women.

The gingival tumor of pregnancy usually occurs as a single lesion arising anywhere in the oral mucosa, although it appears most often in the upper incisor region. It is purplish or dark red, with a bright red border. If traumatized it ulcerates and bleeds easily. It is fairly firm, often papillomatous, of varying size and shape and is sessile. The lesion seldom exceeds 2 cm. in over-all dimension. It usually appears between the third and fifth month of pregnancy, and increases in size with the duration of gestation. It may regress somewhat after term, but generally the lesion persists only to enlarge progressively with each succeeding pregnancy.

The tumor is covered by squamous epithelium except where ulceration has occurred. The underlying stroma is made up of numerous blood vessels and regions of fibrous tissue proliferation. Regions of round cell infiltration usually are present, although acute inflammatory changes are absent except in the region of ulceration.

Although many small tumors regress *post partum*, they usually reappear and enlarge during

subsequent pregnancies. Most investigators recommend that surgical excision be carried out. Blum advises that the excision be carried down to the periosteum to avoid recurrence of the tumor. Good oral hygiene is important.

In a 38 year old primipara in her twenty-sixth week of gestation, a granulomatous lesion was noted on the alveolar margins of the left maxillary central and lateral incisors. Roentgenograms revealed no periapical pathologic condition. The fibrous, sessile polyp which measured 1.2 by 1.0 by 0.3 cm. was removed under local anesthesia, and the base was curetted.

In a 20 year old *gravida II Para I* Mexican woman, two days after childbirth, a 1.5 by 0.75 cm. pedunculated, polypoid lesion was attached to the gingival margin between the maxillary left second bicuspid and first molar. The patient said that the lesion developed during an earlier first pregnancy and seemed to regress at the termination of the pregnancy. During the second trimester of the second pregnancy, the mass gradually increased in size and continued to do so until delivery. Roentgenograms showed no periapical pathologic condition. When the lesion did not regress, and interfered with mastication and oral hygiene, it was excised and the interproximal region was curetted. Two chromic sutures were inserted for hemostasis.

Santa Clara County Hospital, San Jose, Calif.

Fluoride domestic water and periodontal disease

A. L. Russell. *Am.J.Pub.Health* 47:688-694 June 1957

The relation of periodontal disease to the consumption of a fluoride-bearing domestic water was investigated. Examinations were made of nearly 20,000 persons of both sexes whose ages ranged from 7 to 78 years.

The status of the periodontal tissues of residents of three communities with fluoridated water—Newburgh, N.Y., Colorado Springs, Colo., and Bartlett, Texas—was compared with the status of the periodontal tissues of residents of three communities with little or no fluoride in the water—Kingston, N.Y., Boulder, Colo., and Cameron, Texas. The domestic water of the first three communities carried about 1.0 ppm, about 2.5 ppm and about 8.0 ppm of fluorides, respectively.

The more favorable condition of the periodontal tissues was observed in the communities with fluoridated water. If use of a fluoridated domestic water has any adverse effect on the health of periodontal tissues, it is likely that this effect would have been revealed clearly in one or all of these studies. The fact that no adverse effect is evident is wholly incompatible with any hypothesis that use of a fluoride-bearing domestic water is harmful to the periodontal tissues of children or of adults. On the other hand, the slight differences in favor of the communities with fluoridated water are too weak for acceptance as evidence that use of a fluoridated water is beneficial to periodontal tissues.

Native school children in a series of communities, each with about 1.0 ppm of fluoride in its domestic water, were compared with migrant children in the same communities. There was a weak tendency for the health of the periodontal tissues of native children (in comparison with those of migrants) to improve as their advantage in waterborne fluoride consumption increased.

National Institute of Dental Research, Bethesda, Md.

Can periodontosis be caused by extrinsic allergies?

(La parodontose est-elle une maladie allergiques?)

Ernst Julian. *Paradontol.,Zürich* 9:114-117 Sept. 1956

To prove or disprove the often discussed theory that periodontosis may be caused by allergic reactions of the connective tissue of the periodontal membrane to a specific extrinsic antigen, several hundred rats were sensitized with subcutaneous, intramuscular or intravenous injections of horse serum. Local edemas and necroses (phenomenon of Arthus) were the primary consequences observed.

The rats were divided into two equal groups. Group 1 received injections of the horse serum into the sublingual mucosa one week after the preliminary injection. Group 2 received injections

into the vestibular mucosa two weeks after the first injection. Allergic, inflammatory reactions followed these injections in both groups and led within two months to a pronounced decomposition of the alveolar bone.

Microscopic examinations revealed an edematous renovation of the blood in the connective tissue of the periodontium. The labial mucous membrane showed signs of gingivitis with serofibrinous exudate. After from one to three weeks, the gingivitis progressed to a periodontosis with pathologic changes in the palatal surfaces of the alveolar process.

The results of these animal experiments seem to indicate that a relation exists between allergic reactions of the periodontal tissue to specific extrinsic antigens and the development of periodontal disease.

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Quantitative evaluation of the therapeutic effect of selective grinding

Hans R. Mühlemann, Hans Herzog and Klaus H. Rateitschak. *J.Periodont.* 28:11-16 Jan. 1957

Traumatic occlusion, a contributory factor in periodontal disease, is a condition produced by abnormal occlusal masticatory and parafunctional stress on the tooth supporting structures. One of the methods of treating traumatic occlusion is selective grinding, aimed at a symmetrical, balanced distribution of forces during mastication and swallowing. The changes occurring in periodontal structures as a consequence of selective grinding are reported. The therapeutic effect of selective grinding was evaluated by tooth mobility measurements.

The nine patients, 19 to 46 years old, each had had unilateral masticatory function for many years. After selective grinding, the patients were advised to chew on the previously nonfunctioning side.

Before selective grinding, tooth mobility was 30 per cent higher on the hypofunctional side than on the hyperfunctional side. It was highest in the balancing region of the hypofunctional side. Selective grinding aimed at a re-establishment of bilateral function reduced tooth mobility on the hypofunctional side by 18.1 per cent, and on the hyperfunctional side by 8.7 per cent. Tooth mobility increased, however, in both upper central incisors, suggesting new occlusal trauma.

The re-establishment of completely equilibrated bilateral function in patients who have had unilateral chewing habits for many years appears to be impossible. Several months after selective grinding, the mobility values of homologous teeth were still asymmetrical.

The following clinical conclusions were drawn:

1. The re-establishment of function in hypofunctional regions should be attempted.
2. Occlusal contact in the balancing (hypofunctional) region should not be attempted.
3. The occlusion of the incisors in centric and protrusive occlusion should be checked some time after selective grinding.

Dental Institute, University of Zurich, Zurich, Switzerland

Examination of the metabolism of gingiva and saliva in patients afflicted with periodontosis

(Stoffwechseluntersuchungen von Gingiva und Speichel an Paradontosepatienten)

H. K. Schrader and R. Schrader. *Paradontol., Zurich* 11:10-11 March 1957

Chronic inflammatory alterations of the gingiva are significant symptoms in the pathogenesis of gingivitis and periodontitis and the consequent tooth loosening and bone resorption.

In the surgical department of the Dental Institute of the University of Bern, Switzerland, the metabolism of gingiva and saliva in patients with periodontosis was examined to detect a possible relation between gingival and periodontal disease and alterations in osseous structures. The relation between these pathologic changes and the condition of the saliva also was investigated.

With Warburg's respirometer, the oxygen consumption of living healthy and inflamed gingival tissue was determined. An average increase of the oxygen consumption of inflamed gingiva of 83 per

cent was observed. The epithelium of the gingiva (whether healthy or inflamed) requires at least three times more oxygen than does the oral mucous membrane. For a critical examination of the metabolism of gingiva and saliva, it is necessary to consider the composition of both substances.

To determine the oxygen consumption of the saliva, the patients were classified as follows: (1) those with healthy gingiva and no alterations of osseous tissue; (2) those with inflamed gingiva but with no alterations of osseous tissue; (3) those with healthy gingiva and destructive alterations of osseous tissue, observable in roentgenograms, and (4) those with inflamed gingiva and destructive alterations of osseous tissue.

The highest degree of oxygen consumption was observed in Group 2, whereas in Groups 3 and 4 a reduction of the oxygen metabolism had taken place.

It can be assumed, therefore, that a relation exists between the gingival inflammation and the condition of the saliva, and a similar relation between the condition of the saliva and the destructive alteration of the bones of the jaws.

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▼ Endodontics

Histologic comparison of two pulp capping agents

James R. Jensen. *J.A.D.A.* 54:595-597 May 1957

The most commonly used pulp capping agents are (1) zinc oxide and eugenol, or preparations that are basically composed of these two materials, and (2) calcium hydroxide either by itself or as the basic ingredient of various commercial preparations.

Glass and Zander (1949) demonstrated histologically, on human teeth, the superiority of calcium hydroxide over zinc eugenate as a capping agent. Since their work, many commercial preparations have been placed on the market, including a product containing calcium hydroxide, zinc oxide, iodoform, phenol and eugenol.

It was decided to determine, histologically, what effect this material had on the pulps of teeth in dogs. The effect of the mixture was compared with pure calcium hydroxide. The pulps of 12 teeth in each of three dogs were capped. Histologic examination revealed no distinguishable differences in the rate of healing after from four to eight weeks, or in the results produced by either capping agent. There is no apparent advantage or disadvantage in adding zinc oxide, iodoform, phenol and eugenol to calcium hydroxide for use as a capping agent for exposed vital dental pulp tissue.

School of Dentistry, University of Minnesota, Minneapolis, Minn.

Progress in treatment of pulpitis

(Fortschritte in der Praxis der Pulpitisbehandlung)

Rudolf Waechter. *Österr.Zschr.Stomat.* 54:29-38 Jan. 1957

At the Dental Clinic of the University of Graz, Austria, the method usually selected for treatment of the various types of pulpitis (developed by A. Mayer) has been modified by the author.

This method is especially indicated in the following instances: (1) in anterior teeth in which the pulp is exposed as a result of trauma or fracture of the tooth crown; (2) in anterior teeth in which pulp exposure is caused by caries and (3) in posterior teeth in which pulpectomy is contraindicated.

Under local anesthesia, the coronal portion of the pulp is removed with a rose bur. The main object is to preserve the vitality of that part of the pulp which is contained within the root canals.

The tooth crown is cut away sufficiently to expose the entire pulp chamber and to show the openings of the enamel and dentin tubules. Profuse hemorrhage may follow pulpotomy. The blood is washed away with a normal saline solution. Such a hemorrhage depletes the engorged vessels and is beneficial. A dressing of phenol seals the remaining tissues for about 24 hours, and desensitizes the shred of tissue. These tissue shreds can be removed and the root canals sterilized at the next sitting.

It is advisable to maintain a physiologic rest period for the treated tooth for from four to six weeks.

The filling consists of tricalcium phosphate and eugenol inserted in thin layers into the cavity without pressure, followed by a thicker mixture, a layer of gutta-percha, and then the final permanent filling.

This method has been used at the Dental Clinic in instances of acute, chronic, hypertrophic and suppurative pulpitis originating from various causes. In 68 per cent of the patients treated, perfect results were obtained. In the hands of experienced and skilled practitioners—instead of dental students—the percentage of success will obviously be higher.

The most satisfying form of treatment of pulpitis is not successful surgery but prevention. Injuries to the pulp should be avoided, and if they occur should be treated immediately, thereby making pulpectomy or pulpotomy unnecessary.

Türkenstrasse 15, Vienna 9, Austria

Subcutaneous emphysema occurring after endodontic treatment
(Emphysem nach Zahnbehandlung)

A. Bichlmayr. *Deut.zahnärztl.Zschr.* 12:378-380 Feb. 15, 1957

During the war, subcutaneous emphysema caused by bullet or shell splinter wounds in the maxillofacial region were reported frequently.

The occurrence of subcutaneous emphysema due to trauma sustained in endodontic treatment, however, seems to be a unique incidence.

The patient, a 65 year old man, appeared at the dental office for treatment of a fractured upper left lateral incisor.

History revealed the following data: (1) previous polyarthritis; (2) compensated heart defect and (3) satisfactory general health condition.

Examination of the fractured tooth showed an injured but still vital pulp, and a strongly contracted root canal.

Under the effect of local anesthesia with lidocaine hydrochloride (Xylocaine), the root canal was enlarged, the remaining parts of the pulp removed, and before the pivot was cemented for a jacket crown, the root canal was sterilized and then cleaned with air. Although the patient did not complain during endodontic treatment, it was assumed that the root canal was perforated accidentally during treatment.

A short time after insertion of the jacket crown, the patient again visited the dental office, and complained that he felt a constant pressure and a swelling in the connective tissue spaces under the skin of his left cheek. The abnormal enlargement increased until the left eye was closed completely. The swelling covered the entire left side of the face from the temple over the edge of the mandible to the subclavicular region.

The condition was diagnosed as a subcutaneous emphysema caused by penetration of cold air into the perforated root canal.

After treatment consisting of calcium injections and lukewarm boracic compresses, all symptoms disappeared.

Beselerallee 24, Kiel, Germany

Orthodontics and pedodontics

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Orthodontics

The Alameda instrumentalist study

John H. Parker. *Am.J.Orthodont.* 43:399-415 June 1957

A study was made of the problem of the influence of musical instruments as related to tooth positioning. Eighty-four music students of all ages and both sexes in Alameda, Calif., were studied roentgenographically in the cephalometric head holder with their jaws in closed position, in rest position, and while they were playing a note on their individual instruments.

Musical instruments of the brass and wood-wind types were divided into the following four groups (Porter, 1952):

Class A (brass instruments having a cup-shaped mouthpiece): trumpet, French horn, German horn, alto horn, trombone, baritone, euphonium and tuba.

Class B (wood-wind instruments having a hole in the head of the instrument across which air is blown): piccolo and flute.

Class C (instruments having a single reed ligatured to the mouthpiece): E flat clarinet, B flat clarinet, A clarinet, alto clarinet, bass clarinet, B flat soprano, B flat soprano saxophone, B flat tenor saxophone, E flat baritone saxophone and bass saxophone.

Class D (instruments having a double reed as mouthpiece): oboe, oboe d'amore, cor anglais, heckelphone, bassoon and contra bassoon.

Embouchure is the mode of applying the lips to the wind instrument.

The following conclusions were reached:

The belief of some orthodontists that one instrument should be favored over another in the hope that teeth will be influenced favorably is fallacious. A comparison indicates relatively little difference in the average maxillary incisor angle of the clarinet and trumpet players. Within the clarinet group there was a favorable maxillary incisal angle relation in the Class II, Division I group, and this is deserving of more study. If the patient is under the proper supervision and is using the correct embouchure, the orthodontist need not concern himself about a clarinet, flute or saxophone player who may have a Class II, Division I malocclusion.

Perhaps the young patient with a Class II, Division I malocclusion should start early in life to develop muscular tonicity with one of the Class B or Class C instruments. The lips, if permitted to remain in nonfunction in the early ages, may never obtain the proper tonicity. It is feasible to expect that the mucosa of the lips may be traumatized during active treatment from sharp or unpolished labial bands, causing the instrumentalist to assume an unnatural blowing position and, if he plays a Class C instrument, to resort to biting the mouthpiece, thus defeating the advantage gained by the correct embouchure. Every effort should be made by the orthodontist to protect the patient's lips against injury by using highly polished bands (edgewise double width brackets apparently are satisfactory) and advocating soft wax where irritations may develop. The orthodontist should consult with the music instructor when it is deemed advisable. After the completion of orthodontic treatment, adequate incisal retention must be established in both maxillary and mandibular arches. The proper embouchure will assist in maintaining the maxillary teeth in a favorable position, but the mandibular incisors will be carried lingually with rotations unless some form of appliance is used from the lingual side. These patients should be observed, with a longer retention period than normal.

The consistent positioning of the hyoid bone in its closed and rest positions is more favorable in the trumpet player than in the clarinet player. This may be associated, in part, with the numerous instances of closed bite observed among clarinet players. Perhaps a more balanced tonicity is developed between the internal and external

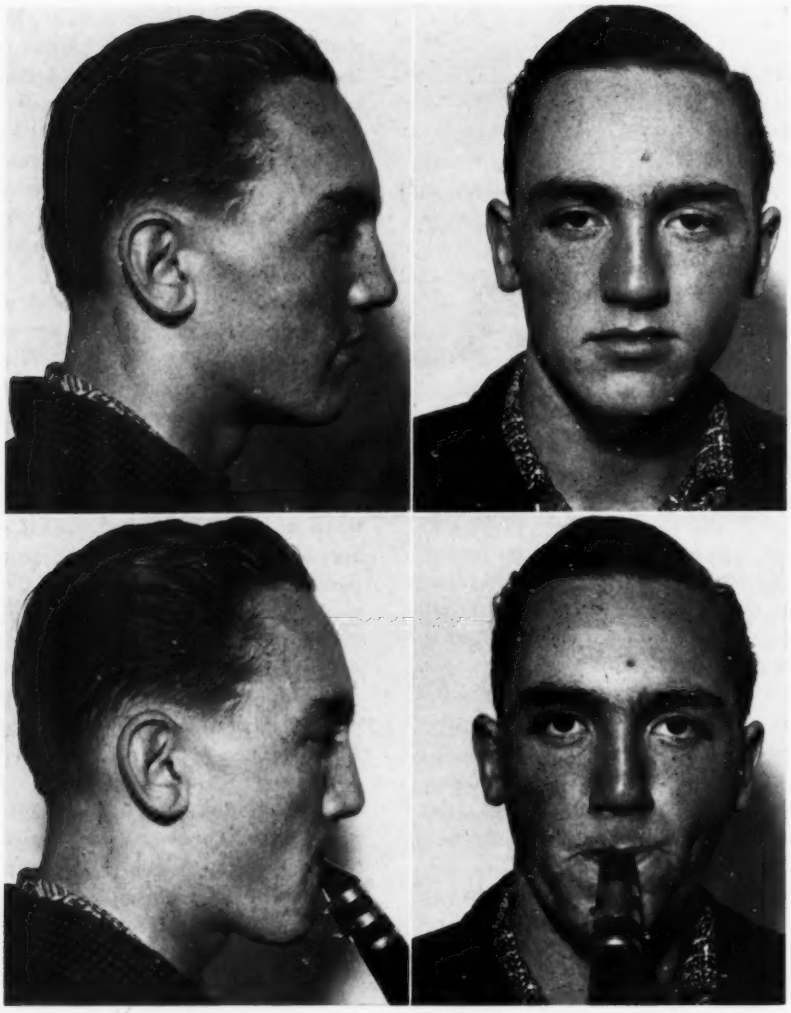

Figure 1 The correct embouchure implies the correct placement of the lips in which there is contraction of the muscle fibers, causing the face to assume a tenseness or strong muscular tonicity that draws the nose down, flattening or bulging the upper lip (according to the individual) while the lower lip folds inward over the mandibular incisors, thus forming a small hole through which air is blown for Class B instruments, or forming the entrance for the insertion of the mouthpiece in Class C instruments

Figure 2 Types of lips. Above, left: A trumpet player. Above, right: A clarinet player. Below, left and right: A saxophone player who apparently is a mouth breather

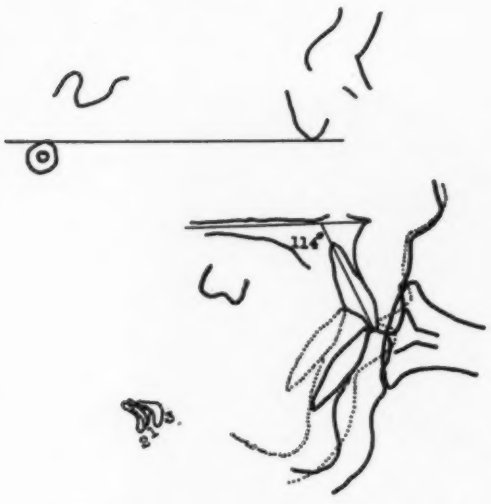

Figure 3 A patient with Class II, Division 1, malocclusion has thrust his jaw forward but cannot negotiate the music instructor's desired separation of the anterior teeth because the combination of "thrust" and "open" produces an external pterygoid muscle fatigue. The condyles moving downward and forward attain a position that becomes difficult to maintain. This tracing disclosed, for the first time, why many orthodontic patients fail to respond to instrumental therapy. This boy has developed his own method of playing and is very proficient. He has been playing the trumpet for four years and still has extreme Class II, Division I, malocclusion. His proficiency in playing after completion of orthodontic treatment is uncertain

pterygoid muscles, temporal muscles and the suprahyoid and infrahyoid muscles. Further study of these implications is necessary.

The apparent favorable angulation of the maxillary incisors in the clarinet players indicates that the orthodontist no longer should insist that Class II, Division I orthodontic patients play the trumpet, unless there is a complete agreement with the parent and music instructor.

Strayer (1939), in recommending the Class A instruments for all Class II, Division I patients, failed to appreciate the many frustrations accompanying such attempts.

From the Alameda study, it is apparent that all of the brass and wood-wind instruments must be considered helpful in developing muscle tonicity, particularly for the person who is a mouth breather or who has a short upper lip. There is a favorable influence acting on the teeth from those instruments studied in this project when approached with the correct embouchure. Not all music instructors, however, will teach the correct embouchure; therefore, all orthodontists should insist that their patients consult qualified teachers in order to maintain and develop the balanced muscular tonicity.

2241 Central Avenue, Alameda, Calif.

Speech defects caused by pathologic conditions in the oral cavity (Sprachstörungen bei Erkrankungen der Zähne und des Mundes)

R. Neujoks. *Medizinische* 51:1807-1809 Dec. 21, 1956

The proper formation of vowels is seldom disturbed by pathologic alterations of oral tissues or by extensive tooth loss.

The correct pronunciation of consonants often is made difficult by missing teeth or a pathologically changed oral condition. There will be few significant changes in the formation of the so-called semivowels, but the pronunciation of fricative consonants becomes impossible. Multiple loss of teeth, for instance, impairs the correct formation of the F, V and W sounds [in the German language].

Prognathism usually does not impair the patient's speech faculty. Open bite, especially in the anterior or lateral region, prevents proper formation of the S sound.

Some minor speech defects may be cured by speech therapy, but the majority of such defects can be eliminated only by orthodontic treatment.

Prosthetic procedures alone are seldom successful in improving faulty formation of sounds. Inserted dentures, by a partial immobilization of the tongue, even increase the difficulty of forming a normal speech rhythm.

Abnormal connections between the oral and the nasal cavities cause the most severe speech defects, as do inherited conditions such as clefts in lips, jaws and palates. The severity of the speech defect corresponds to the seriousness of the cleft. In many patients with clefts, speech is

incomprehensible. In patients with clefts in lips, jaws and hard palates, speech can be improved by surgical intervention and subsequent phoniatric treatment. Surgical intervention in instances of cleft of the soft palate, however, is seldom successful.

Some speech defects, caused by clefts in the hard or soft palate, can be significantly eliminated by orthodontic treatment consisting of the insertion of an obturator (or obturator velum), especially in those instances in which surgery is contraindicated.

Martinistrasse 52, Hamburg 20, Germany

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Growth and development

Mesiodistal crown diameters of the deciduous and permanent teeth in individuals

Coenraad F. A. Moorrees, Selma Ø. Thomsen, Elli Jensen and Peter Kai-jen Yen. *J.D.Res.* 36:39-47 Feb. 1957

Since the crowding and spacing of teeth depend in large measure on the relation between the size of the bony dental arch and the size of the teeth, the importance of mesiodistal crown diameter as one of the two factors in the equation is clear. The relationship between the mesiodistal crown diameters of the deciduous and permanent teeth likewise plays an important role in the development of occlusion of the permanent dentition.

As one aspect of a longitudinal study, mesiodistal crown diameters were obtained by measurements of plaster casts of the deciduous and permanent dentitions of 184 North American children of European ethnic origin, between the ages of 3 to 18 years. The statistical analysis of the data for single teeth and for groups of teeth is presented tabularly.

The tooth crowns of the boys are invariably broader than those of the girls. This sex difference is larger for the permanent than for the deciduous teeth, and it is more pronounced for the cuspids than for any other teeth in both dentitions.

The mean mesiodistal crown diameters of the deciduous teeth are smaller for the North American children studied here than for the Swedish children measured by Seipel, except for the deciduous maxillary second molars. For both sexes these differences are statistically significant, with the exception of those for the deciduous maxillary central incisors and the maxillary and mandibular second molars. Generally, the permanent teeth of the North American children are also smaller, although not always significantly so, than the teeth in the two samples of Swedish children studied by Lundström and Seipel.

Although, on the average, the permanent teeth exceed the deciduous teeth in mesiodistal crown diameter, the former can be either smaller or larger than their deciduous predecessors. The combined mesiodistal crown diameters also may be the same in the two dentitions, so that the permanent teeth occupy the same amount of space in the dental arch as did the deciduous teeth.

The Forsyth Dental Infirmary for Children, Boston, Mass.

Operative dentistry

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Inlays and fillings

The wedge onlay: its technic and indication

(L'onlay a clavette: sa technique et ses indications)

René Le Huche. *Neues Zahnhk.* 3:244-245, 1957

The wedge onlay (wedge-shaped cast overlay) usually is attached to partial veneer crowns to provide adequate anchorage for bridges in the anterior region.

Wedge onlays are frequently used in the metallurgical industry but rarely in operative and prosthetic dentistry, although they could be of considerable service in these fields.

Wedge onlays, however, should not be used to improve otherwise inadequate crown or bridge constructions.

The wedge onlay is inserted in a vertical direction between the metallic surface of the bridge and the abutment tooth, is about 5 mm. long, and has a retentive power so effective that the two different parts—onlay and tooth—appear as a unit which cannot be separated.

Wedge onlays are indicated in the following instances: (1) in flattened incisors where increased retentive force and esthetic appearance are desired; (2) in middle-sized incisors where the esthetic effect and the retention of customary inlay types require improvement; (3) in cuspids where they provide the same security as do complete crowns, and (4) in bicuspids and molars in which caries has extended to such a depth that the slice cavity preparation for the two-surface inlay technic appears to be impractical.

The cavity is widened with sharp handpieces, and the carious dentin is eliminated. The region is isolated with cotton rolls or rubber dam. After the cavity is dried, silver nitrate is applied, and then it is packed with a thick mixture of zinc oxide and eugenol into which a minute quantity of cotton fiber is incorporated.

This completes the temporary cavity preparation, and the patient is dismissed for from 24 to 48 hours.

During the next appointment, the zinc oxide-eugenol mixture is removed and the cavity is planed deeper with a knife-edged mounted carborundum wheel and tapered from the gingival to the occlusal side. The buccal, lingual and occlusal edges of the cut surfaces are beveled.

A double compound impression is taken; a finger-clip impression tray is best for this purpose.

After preparations have been made to secure the proper occlusion for the partial veneer crown, the wax bite is taken.

The compound impression is poured with high-heat investment material to produce a hard, smooth-faced model. After setting and separation, the base of the model is trimmed, and a groove on each side of the model base is cut reaching the proximogingival margin of the preparation for the wedge onlay.

A piece of modeling compound is softened and a saddle is formed. After the compound has cooled, the model is removed and broken apart where the grooves have been cut. The fragments are assembled and put into position on an articulator.

The wax pattern is further adapted with art gum. If the investment model is not water-soaked, the sheet casting wax so adapted will adhere without being waxed down at the cervical margins. The excess wax overlying the cervical margins is trimmed, leaving about 1 mm. excess around the tooth.

Wax and moisture are eliminated by a gradually increasing heat, and the model is invested in the casting flask in which the same mixture is used as in making the investment model.

The flask now is ready to be placed in the casting machine, and the casting process is carried out while the investment is hot. To cast a thin wedge onlay, three times the pressure is required as for customary inlays.

The advantages of wedge onlays are as follows: (1) the retention is extremely strong; (2) bridges from cuspid to second or third molars can be anchored securely; (3) the highest degree

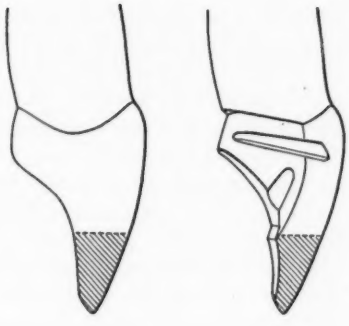

Figure 1 In preparation for wedge onlays, the incisal third of the tooth is preserved

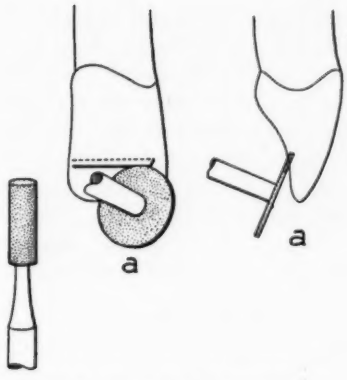

Figure 2 Cutting the grooves with diamond wheels

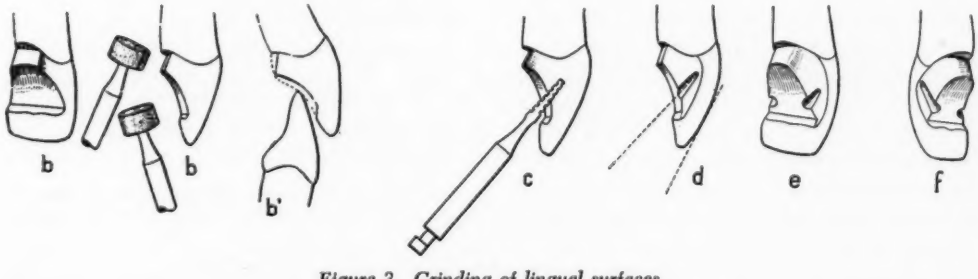

Figure 3 Grinding of lingual surfaces

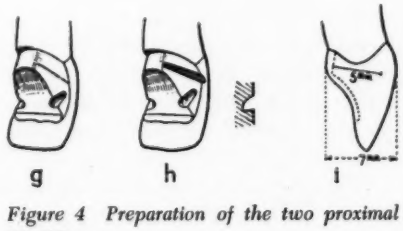

Figure 4 Preparation of the two proximal grooves

Figure 5 Wedge onlay and bridge replacing a missing central incisor

Figure 6 Wedge onlay and bridge in detail

of esthetic appearance can be achieved, and (4) the incisal third of the tooth can be preserved.

Wedge onlays are contraindicated in the following instances: (1) when the pulp is too large; (2) when the pulp reaches too high, and (3) when partial veneer crowns or bridges are undesirable.

4, Boulevard Henri, Paris 4, France

Preservation of the dental pulp in deep seated cavities

Harold Berk. *J.A.D.A.* 54:226-233 Feb. 1957

After the carious dentin in a deep cavity has been removed completely, the pulp must be protected against irritation by sterilizing agents, cements and restorative materials. Calcium hydroxide when used as a liner protects the pulp against chemical irritation. A liquid suspension of calcium hydroxide in aqueous methylcellulose solution has a salutary effect on the pulp. Its use for coating dentin, for pulp capping, and after pulp amputation has resulted in a gratifying incidence of success.

A thin layer of this liquid preparation is easily applied to the dentin with any simple applicator such as a spoon excavator, pellet of cotton, paper point or camel's-hair brush. After the dentin is coated, it is dried by a gentle stream of air until a dull white film develops. Immediately after the dentin is so coated, sensitivity of the prepared tooth is greatly reduced. This lining material is water miscible, and any excess around the margins may be removed by wiping with a moist pellet of cotton. When a cement base is placed over this liner, the patient experiences no pain.

Calcium hydroxide, in addition to providing protection against chemical irritation, may stimulate formation of a new layer of dentin over the region of exposed vital pulp tissue.

In lining deep cavities, all denuded dentin should be coated with a protective film of calcium hydroxide prior to the insertion of any filling material or cementation of crowns, bridges, inlays or splints.

Pulp capping is indicated if there is a mechanical or carious exposure of the pulp of a vital tooth, in the absence of contamination, infection or necrosis, or if intact pulpodentinal membrane is present. Pulp capping is contraindicated if there has been carious or mechanical exposure in which the deeper structures of the pulp have been contaminated, or if gross infection, localized or generalized, is present.

Pulp amputation is indicated if there has been (1) exposure of a vital pulp with a localized abscess or infection in the coronal portion of the pulp; (2) laceration of the pulpodentinal membrane with introduction of contaminants; (3) exposure caused by traumatic injury, or (4) a doubtful prognosis for pulp capping. Pulp amputation is contraindicated if there is (1) necrosis of the pulp, or (2) roentgenographic evidence of a region of apical rarefaction.

U.S. Public Health Service, National Institutes of Health, Bethesda, Md.

Pulp reactions to resin cements

(Pulpareaktionen bei Verwendung von Resinzementen)

K. Langeland. *Deut.zahnärztl.Zschr.* 12:602-615 April 15, 1957

In the laboratories of the Norwegian Institute for Dental Research in Oslo, three brands of resin cements, advertised as filling materials, were investigated.

The tests were made to determine the reaction of the pulp to resin cements. In two brands, the claims of the manufacturers that their products possessed specific bactericidal properties were also investigated.

In the experiments, 35 deciduous bicuspids of children from 10 to 14 years old were used.

The time of investigation and observation varied from 1 to 195 days. The observations led to the following conclusions:

1. All three brands of resin cement produced certain pathologic alterations in the pulp, often severe irritations.

2. These pathologic alterations were irreversible.

3. The limited region of dentin which was exposed to the effects of the resin cements during the tests was not sufficient to permit a proper evaluation of possible injury to dentin. Had larger regions of dentin been exposed to the ef-

fect of the resin cements—as in fillings or inlays—the data would have been more conclusive.

4. The claims of the manufacturers of two brands of resin cements that they possess specific bactericidal properties could not be verified.

5. All three brands of resin cements produced the same injurious reaction in the pulp as do most of the self-curing acrylic resins used as filling materials.

It must be assumed that the resin cements still are in a developmental stage and are not suitable as filling materials. They should be used only in animal experiments or in studies with extracted human teeth.

Control tests were carried out with several brands of dental amalgam, DeTrey's cement and "Texton"; all showed no significant alterations in the pulp, whereas the three brands of resin cements produced pathologic alterations varying between mild, moderate and severe.

Josefinegaten 32, Oslo, Norway

Proportioning of dental amalgam

R. E. Oberbreckling, C. W. Fairhurst and Gunnar Ryge. *Internat.A.D.Res.Preprinted Abs.* 113 March 21, 1957

A variety of alloy and mercury dispensers or proportioners is available to the dental profession. It was noted that the proportioning obtained by some of these dispensers appeared to be somewhat unreliable. A study was undertaken to determine possible variations in proportioning caused by repeated use of several proportioning devices by one operator, and to obtain variations among various operators using the same equipment.

Mercury and alloy dispensers of various types and brand names, purchased on the open market, were controlled for accuracy by weighing the dispensed portions. Each of five operators dispensed ten portions of mercury and alloy with each dispenser into preweighed glass vials. Arithmetic mean weight, deviation from mean weight and standard deviation were computed for each operator for each dispenser.

There is a considerable difference in the accuracy of proportioning obtained with various types and brands of dispensers and in some instances differences exist between various dispensers of the same brand. Volumetric proportioning by certain brands of mercury dispensers in connection with alloy delivered by the manufacturer in preproportioned or pellet form gave the best accuracy.

Marquette University School of Dentistry, Milwaukee, Wis.

Influence of certain condensation procedures upon the mercury content of amalgam restorations

Robert T. Wilson, Ralph W. Phillips and Richard D. Norman. *J.D.Res.* 36:458-461 June 1957

The clinical success of amalgam is influenced to a great extent by the final mercury content of the restoration. A study was undertaken to determine if some difference in mercury might exist in different regions of a typical dental restoration, particularly in the critical marginal regions, when various technics were used. More than 100 restorations were condensed, using five different condensing instruments, two series of at least ten restorations being completed with each condenser. One series used amalgam in which the entire mass had been wrung dry; the other series employed the "increasing dryness" technic in which the mass of amalgam was divided into increments and each increment wrung progressively dryer.

Regardless of the method of condensation or the dryness of the increments used to build the restoration, the marginal regions of the amalgam restoration contained a higher percentage of mercury than did the bulk of the restoration. The residual mercury was slightly higher when the increasing dryness technic was employed.

Indiana University School of Dentistry, Indianapolis, Ind.

Basic science

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Anthropology

Contribution to the dental study of the Katia Indians (Aporte al estudio odontológico de los indios Katios)

Leonel Estrada. *Heraldo dent.* 2:5-11 Oct. 1956

The Caramanta and Andágueda Indians, who belong to the Katia race, are two distinct and separate groups. Although they live in civilized regions in Colombia, their customs are primitive. In spite of the fact that they feel a certain embarrassment in connection with their mouths, they cooperated readily with the author in the dental studies he made among them. His equipment consisted of x-ray machines, cameras for both still and motion pictures, a magnetic engraver, and instruments for oral diagnosis and the making of anthropometric measurements.

Abrasion of the teeth, which is said to be one of the characteristics of primitive races, was a conspicuous finding, especially in the 30-year age group. It was more pronounced in the lower jaw and often progressed to the point of destroying two thirds of the crown. Abrasion of this kind is never seen in the men of the cities, or even in the patients of mixed blood in charity hospitals. No explanation can be found for it. The diet is soft and consists principally of cereals, carbohydrates, and so forth; fish and meat are rarities.

Dental caries was found in 45 per cent of those examined: the aged are almost immune, but it was present in 65 per cent of the children aged 5 to 14 years, probably because of the greater consumption of carbohydrates among the young. Caries is also a recognized accompaniment of a soft diet; peoples who live by hunting and fishing have fewer dental diseases than do the agriculturalists whose food consists largely of cereals. An interesting point, and one that should be studied further, was the fact that the caries was almost always occlusal in the molars, whereas among white persons it is usually proximal. Periodontal disturbances of an osseous nature were seldom seen, but lesions of the soft tissues were common. Deposits of calculus were extensive and widely encountered.

Macrodontia was a pronounced characteristic of these Indians, and their dental arches were almost square instead of U-shaped or V-shaped like those of the white races. The size of the alveolar apophysis explains the bimaxillary prognathism so common among the Indians, especially those in Andágueda. Malocclusion and dentomaxillary disorders are common, being found in 65 per cent of the young. Another conspicuous stigma in both children and adults is

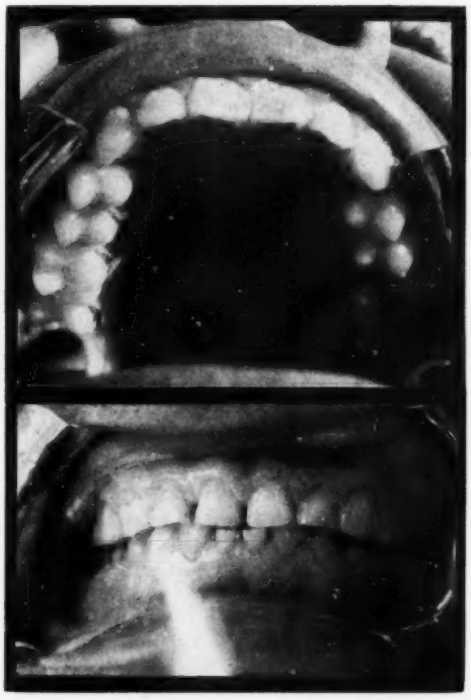

Figure 1 Above: The dental arches are almost square. Below: Abrasion of the teeth is common, especially in those over 30 years old. Abrasion is more pronounced in the mandibular teeth.

Figure 2 The Indians in Andágueda chew kidua in the belief it will prevent caries. The herb stains the teeth black

Figure 3 The round or square appearance of the face is caused by pronounced hyperplasia of the parotid glands rather than by development of the masseter muscles

rotation of the upper central incisors, which is said to occur in 91 per cent of American Indians.

Half the subjects studied had missing teeth, but in no instance had they been removed for esthetic or religious reasons, as they sometimes are among other tribes of American Indians. The Caramantas do not chew "mambe" (dry coca leaves and slaked lime) or abrasive substances. Those in Andágueda, however, use kidua, an herb that stains the teeth black, because they say it prevents caries. Finally, one of the most significant findings in this study was pronounced hyperplasia of the parotid glands, to which the round or square appearance of the face is due. This hyperplasia is present in 40 per cent of the Indians over 30 years old and its cause should be investigated.

Medellin, Colombia

Discovery of remains of early man

H. de Terra. *Germ.M.Monthly* 1:356 Nov. 1956

Excavations, in which geologists and paleontologists participated, have been carried out near Grosseto in Tuscany, Italy. At a neighboring site, fossil remains of a primate, at first believed to be those of *Cynpithecus*, had been discovered 80 years ago.

J. Hürzeler of the Museum of Natural History in Basel, Switzerland, who specializes in paleontologic research on vertebrates, examined the recently found remains, and stated that they do not belong to lower Anthropidea (*Oreopithecus*) but to Hominidae.

Oreopithecus cannot be regarded as a species of early man because of the age of its origin (more than 10,000,000 years ago), its dwarfish stature (between 1.20 and 1.30 meters) and other characteristics of a primitive mammalian type of the Old World apes, although certain features of its dentition (especially the formation of molars) resemble those of primitive man.

The fragments found in Tuscany include parts of the skull, a fairly large piece of a hand, the proximal ends of femur and ulna, and some other bones and teeth which, however, have not been prepared and evaluated.

Hürzeler's classification as a species of Hominidae is based on the anatomic characteristics of a closed bite, rounded chin, first premolar (resembling a human bicuspid), vertical position of the lower incisors, orthognathous position of the upper incisor alveoli, shortness of cuspids and first premolars, mental foramens positioned in the middle of the mandible, ascending rami positioned anteriorly to the third molars, the zygomatic bone positioned anteriorly to first and second premolars, an extremely short face, and the insertion of anconeus muscles and flexor muscles to the ulna,—all features similar to those in recent man.

No living or fossil anthropoid ape shows so many characteristically human anatomic features.

All the remains found so far have come from a stratum of lignite, a soft coal often found in Tuscany, which contained also fossil remains of other vertebrates, such as mastodon, anthrocotherium, antelope and crocodile.

Geologic investigations made in the summer of 1956 leave no doubt that the lignite stratum originates from the upper Miocene, that is, in the early Tertiary.

The exploration of neighboring strata will be resumed in the summer of 1957.

Only if additional and supplementary remains of this species are discovered, will it be possible to classify this primeval primate phylogenetically. Only then will it be appropriate to form an opinion on Hürzeler's hypothesis that this species is a link in the evolution of man, not connected with the primates of the Tertiary.

630 West 168th Street, New York 32, N. Y.

Jaw of Gigantopithecus

William L. Straus, Jr. *Science* 125:685 April 12, 1957

The discovery of a fossil lower jaw attributed to *Gigantopithecus blacki* has been reported in the *New York Times* of March 17, 1957. *Gigantopithecus* is a genus of extinct primate predicated on the existence of three fossil molar teeth found by the Dutch paleontologist, G.H.R. von Koenigswald, in native drugstores of Hong Kong between 1934 and 1939. These teeth are colossal, greatly exceeding all known human and anthropoid-ape teeth in their dimensions. Von Koenigswald regarded the holotype tooth as that of a giant ape. The late Franz Weidenreich, however, thought that the teeth were human rather than simian; moreover, he made *Gigantopithecus* a keystone of his tenuous hypothesis that the ancestors of man were giants.

The new find, attributed to *Gigantopithecus*, was recently found in a high cliff cave in Kwangsi province, South China, by a peasant. W.C. Pei, a paleontologist, gives the geologic age of the new find as Middle Pleistocene; this would make the giant a contemporary of Peking man.

Pei obtained an excellent photograph of the new find which suggests that the mandible is quite complete rostrally, and backwards to include the second molars. The remainder of the mandible—third molars, both rami, hence the coronoid processes and condyles—is lacking. The occlusal surfaces of the teeth appear to have been

worn down considerably, so that the crown patterns of the molars cannot be discerned.

From the photograph, one can concur with Pei's diagnosis of the jaw as that of an ape. The canines are massive, as in apes. The first premolar tooth, in contrast to the second, appears clearly to be narrow and compressed, hence sectorial, as in the anthropoid apes (rather than essentially rectangular and molariform, as in hominids); this in turn suggests a large maxillary canine. As in the type specimens, the molars are longer than they are broad, another simian character. The second molar is larger than the first molar, as in anthropoid apes (the reverse being the rule for men).

A large simian shelf of bone juts backward from the lower symphysial region between the two halves of the body of the mandible, as in the great apes, from which one infers with reasonable certainty that there is no chin.

The newly-found jaw, if it truly is that of a *Gigantopithecus*, seems to make it clear that this "Hong Kong drugstore giant," as the late Earnest Hooten dubbed him, was neither an ancestral giant hominid nor an *Australopithecine*, whatever precisely he may have been.

Johns Hopkins University, Baltimore, Md.

Pre-Columbian endemic dental fluorosis
(Fluorosis dental endemica precolombina)

Mercelo A. Obando. *Odontoiatria, Madrid* 13:265-272 No. 5, 1956

The favorable geographic and atmospheric conditions of the Peruvian coast where the climate is dry and rain is unknown have resulted in the preservation of osteological and archeological material placed by pre-Columbian man in tombs excavated in the soil, especially in the desert-like regions of Ancón and Paracás.

Many eminent medical and archeological authorities have studied and described the skeletons found in these tombs, and all have commented on the cranial osteoporosis which distinguishes them and which was not present in the people who lived in the Peruvian Andes.

Their findings, which agree on the whole with descriptions of osseous fluorosis, serve as a background for the discussion of certain examples of dental pathology selected by the author from among the skeletal fragments found at Ancón and elsewhere on the coast. The observations were made on 445 skulls: 115 from Ancón; 200 from Makat-Tampu; 100 from Márquez, and 30 from Paracás. The first three places are in the department of Lima and the fourth is in the department of Ica.

Although most authorities do not admit the existence of mottling in deciduous teeth, it was common in the teeth from the infant skulls examined; in fact, some of the instances of mottling are remarkable for their distinctness and for the way in which they illustrate the whole range of the physical symptoms of dental fluorosis. Examination of the deciduous teeth shows a very fine dark line coloring the cervical edge of the enamel and separating it from the cement of the root. Contiguous to and paralleling this line toward the occlusal surface is a band of normal color. The same characteristic pigmentation also creates a mottled effect in the permanent teeth in the skulls of older persons.

Epidemiologic studies have demonstrated the close relationship between the concentration of fluorides in the drinking water of a given region and the frequency and severity of the changes in the dental tissues induced thereby. Investigations of the frequency of dental fluorosis in the various archeological sites concerned shows that Ancón and Paracás had the highest rates, 77 per cent and 72 per cent. These findings are in harmony with the high percentage of fluoride found in the subterranean waters in these two localities.

Three distinct cultures belonging to three successive periods are represented by the skeletons found at Paracás. Interestingly enough, the dental findings establish the fact that only one of the three groups of men interred at Paracás was indigenous. These were the men whose skulls were found at Las Cavernas and whose teeth showed the mottling characteristic of endemic dental fluorosis. The members of the other two groups, whose teeth showed no signs of fluorosis, were not natives of Paracás and did not live there during their infancy or childhood; instead, they came as intruders, probably when they were in the full tide of manhood.

Jorge Juan 39, Madrid, Spain

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Histology

Esterase activity of developing bones and teeth

M. S. Burstone. *A.M.A. Arch.Path.* 63:164-167 Feb. 1957

A series of procedures was employed for the histochemical demonstration of esterase in the matrices of developing bones and teeth of mice two, five and eight days old. Two methods for the demonstration of alkaline phosphatase were used in an attempt to verify the findings of other studies.

Esterase activity was observed in intracartilaginous and intramembranous bone formation and in both dentin and enamel matrices of the unerupted molar teeth. The zone of predentin did not react whereas the adjacent, partly calcified matrix stained as intensely as the developing bone matrix. Enamel matrix stained homogeneously, but the reaction was not as great as that of dentin or bone.

Both bone marrow and dental pulp exhibited slight or no esterase activity.

National Institute of Dental Research, National Institutes of Health, Bethesda, Md.

Microscopic investigation of root canal diameters

Edward N. Green. *Internat.A.D.Res.Preprinted Abst.* 45 March 21, 1957

An investigation was undertaken to determine the cross-sectional diameters, wide and narrow, of the root canals of 110 extracted human molar and maxillary bicuspid teeth. The teeth were chosen for study because of their extremely fine canals. The specimens were kept separated in half ounce bottles partly filled with 10 per cent formaldehyde solution, and individually labeled. The roots were sectioned perpendicular to the root canal at two levels: (1) 0.5 to 1 mm. from the apical foramen and (2) 5 to 6 mm. from the apical foramen. Prior to examination, each tooth was mounted on a glass slide and stained with Masson III (fast green) to delineate the canal more clearly. Measurements were made with a microscope equipped with an ocular micrometer at 32 diameters magnification.

About 1,200 measurements were tabulated. Briefly, the findings were as follows:

1. The buccal and lingual canals of maxillary first bicuspids were similar in size.
2. The distobuccal canals of maxillary first molars were slightly larger than the mesiobuccal canals. The reverse was true for maxillary second molars.
3. The mesiobuccal canals of mandibular first molars were slightly larger than the mesiolingual canals. This condition also existed in part for the mandibular second molars.
4. The lingual canals of maxillary first molars were somewhat smaller than those of maxillary second molars.
5. The distal canals of mandibular first and second molars were similar in size close to the apex, but at the 6 mm. level the mandibular first molars had smaller canals in the distal root.

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Histochemistry of calculus formation

Irwin D. Mandel, Barnet M. Levy and Bernard H. Wasserman. *J.Periodont.* 28:132-137 April 1957

Early, developing dental calculus formation was studied by placing contoured celluloid strips around the lower anterior teeth of patients known to be "heavy calculus formers." When the strip was interposed between the tooth and its environment, it allowed calcareous material to be deposited on the strip instead of on the tooth. The strips with adherent material were removed at intervals of from 2 to 29 days, fixed and sectioned without prior decalcification. A variety of stains and staining procedures was used.

With the onset of calcification, there appears to be a partial loss of metachromasia and a pronounced diminution in the intensity of the Schiff's reaction. The calcifying areas frequently are laminated by alternate dark and light staining bands that produce a concentric ringlike appearance similar to that of pulp stones and urinary

calculi. The structural and histochemical similarities between salivary calculus and other ectopic calcifications may indicate a common basic mechanism of calcification. The carbohydrate-protein complexes present in the matrices of calcifying tissues may be the common factor in these various calcifications.

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Psychology

The unconscious castrative significance of tooth extraction

Harvey A. Lewis. *J.Den.Children* 24:3-16 March 1957

It is demonstrated by clinical material (in patients undergoing analytic treatment, in patients undergoing dental treatment while in analysis and by an experiment on hypnotized subjects) that dental extraction may be experienced as castration. This is true for the male or the female dental patient.

It is well established that when the little boy and girl discover the difference between the sexes, their personality developments are influenced indelibly by this finding. The little boy interprets the absence of a penis in the girl as evidence that she has been castrated and feels that by the same token he may lose his penis as well. The little girl reasons similarly that she has been castrated or cheated, which feelings give rise to powerful envy of the male organ and a wish to obtain one for herself.

It has been shown many times that the powerful forces released in the Oedipus complex contribute to castration fear and reinforce the threat of castration, as does the related masturbation and the fantasies which accompany it.

Castration fears are given the stamp of reality by the shedding of deciduous teeth in childhood. From this time on, these events become repressed, but case histories show that dental extraction is experienced as an unconscious equivalent of castration in the adult psyche.

The mouth may unconsciously represent the vagina. Young girls may therefore experience dental extraction as sexual assault or rape.

The dentist regularly replaces the father as the feared castrating male in a position of authority. Only this fact can explain why boys and men fear the dentist so greatly and often break their appointments or allow dental pathologic conditions to go uncorrected for so long. Masculine types of women and many young girls behave the same as men.

Knowledge of castration reactions helps the dentist to respond with better understanding and skill, enabling him to use such knowledge as a clue to how to lessen the trauma. The best way to use such awareness of the patient's unconscious response to dental surgery in order to alleviate his fear is to reassure him and to emphasize the improvement and better function he may expect when the work is finished.

Under no circumstances should interpretations concerning castration or sexual assault be made to such dental patients. Rather, such knowledge should be used to render the handling of patients more flexible than would otherwise be the case.

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Physiology

The temporomandibular joint during lateral movement of the mandible: a tomographical investigation on the living person

Bertil Sonesson. *Odont.Revy* 7:369-385 No. 3 1956

Hjortsjö and others have suggested a new interpretation of the mechanism involved in the temporomandibular joint. A summary of these studies has been published by Hjortsjö (1955). To test the validity of the new theory on the temporomandibular joint mechanics, the author has studied the sideward movement of the mandible

in ten men, 20 to 25 years of age, all with clinically normal bite and joint.

The following definitions must be kept in mind in evaluating the joint mechanics proposed: The tuberculum axis passes through the centers of the two tubercula. Tuberculum rotation with forward or backward rotation of the disk takes place about this axis; the capitulum axis passes through the centers of the two capitula. Capitulum rotation forward or backward takes place about this axis; the tuberculum-capitulum axis passes through the center of the tuberculum on the balancing side and through the center of the capitulum on the working side. About this axis takes place the movement of balancing tuberculum rotation with forward or backward rotation of the disk; the working side is that side towards which the mandible is moved. The position of the capitulum mandibulae on this side remains almost unchanged during the lateral movement of the mandible; the balancing side is that side which the mandible moves away from and on this side the position of the capitulum mandibulae changes most during the lateral movement; the balancing indirect backward or forward rotation of the capitulum is a result of balancing tuberculum rotation about the tuberculum-capitulum axis; the center line passes through the centers of the tuberculum and capitulum on the same side, and the ramus line proceeds from the capitulum center toward angulus mandibulae and is herewith parallel to a line touching the posterior contour of the capitulum and the angulus mandibulae.

This tomographic study showed that lateral movement of the mandible differs in principle from forward movement only in that an additional axis is engaged, namely, the tuberculum-capitulum axis. During rotation about this axis the capitulum on the working side remains in the mandibular fossa. In certain individuals, however, a change of position in space of the capitulum takes place on the working side.

In passing from centric occlusion to the maximum lateral position a certain amount of capitulum rotation forward probably takes place in the beginning on the working side.

The three axes of movement in the temporomandibular joint collaborate intimately with each other to make the joint a functional unit during each phase of movement of the mandible. Every movement of the mandible can be traced to one or more of the mentioned axes. The results in the present investigation indicate that Hjortsjö's theory on the temporomandibular joint is clinically applicable and that it gives a basis for a systematic registration of the complicated movements in the temporomandibular joint.

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Biochemistry

Studies of the hydrogen ion concentration in the mouth. II. The effects of rinsing and of beverages on hydrogen ion concentration

H. R. Sullivan, G. Charlton and Dymphna Lennon. *Austral. D.J.* 2:42-45 Feb. 1957

A threefold experiment was undertaken to determine: (1) the respective effects of rinsing the mouth with water and with an acidulated beverage on the hydrogen ion concentration at some of the normal sites; (2) the respective effects of rinsing the mouth with water and with an acidulated beverage on the hydrogen ion concentration of the parotid saliva, and (3) the hydrogen ion concentration of interproximal and occlusal carious lesions, and the respective effects of rinsing the mouth with the two liquids on the hydrogen ion concentration of these sites.

A microglass electrode was used with a Model E Beckman potentiometer to ascertain the pH levels at the different sites.

Boys and girls whose ages ranged from 6 to 16 years were taken at random from those patients attending the operative clinic of the United Dental Hospital, Sydney.

The following observations were made:

1. Although the pH of carious lesions was measured some considerable time after any of the patients had ingested food, the pH remained sufficiently low to cause decalcification.

2. The pH of the carious lesions was unaffected by rinsing the mouth with water.

3. The parotid saliva became more acid after the mouth was rinsed with water.

4. The use of an acidulated beverage caused a drop in the pH of all regions in the mouth. The drop was particularly noticeable in carious lesions where the hydrogen ion concentration was well below the pH usually considered as critical for decalcification.

5. The parotid saliva rapidly becomes alkaline after a rinse with an acidulated beverage, but this seems to have little effect on the pH of carious lesions.

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Bacteriology

The action of individual bacterial strains on human teeth under in vitro conditions

Ward Pigman, Edward Gilman, Ralph Powell and Leslie Muntz. *J.D.Res.* 36:314-324 April 1957

It is accepted generally that dental caries involves the action of microorganisms and the products which they produce. Although much research has been done with the purpose of establishing the nature of the microorganisms involved in the carious process, no general agreement has been reached.

Eight strains of microorganisms of the type occurring in the mouth were found to destroy human teeth extensively in less than 25 weeks, when subjected to the conditions of the artificial mouth. The teeth used in the present study were unerupted or partially erupted third molars. The eight microorganisms were *Lactobacillus casei* (both Hadley and Mahler strains), *Streptococcus salivarius* (both Niven and Kraus strains), *S. faecalis, Micrococcus pyogenes* var. *albus, Micrococcus pyogenes* var. *aureus,* and *Clostridium perfringens.* One other microorganism, *Neisseria catarrhalis,* was found to be without action.

These microorganisms exhibited pronounced differences in their ability to attack the various tissues of the teeth. One strain of *L.casei* (Hadley) exhibited intensive decalcifying action; it had only a moderate ability to destroy decalcified dentinal matrix, but it destroyed external enamel surfaces readily. The other extreme of action was shown by *C. perfringens,* which destroyed calcified and decalcified dentinal matrix without any obvious signs of decalcification. Other organisms showed actions intermediate between the extremes. Some destroyed dentin more rapidly than enamel and produced undercutting of enamel. A pigmentation of dentin seemed to be associated with a rate of dentinal decalcification greater than that of matrix destruction.

A restriction of the bacterial factor in dental caries to lactobacilli species seems an unwarranted oversimplification, but lactobacilli may be "indicator" microorganisms useful for showing the existence of conditions which permit rapid decalcification. The observed ability of a number of oral bacteria to destroy teeth rapidly, under *in vitro* conditions, suggests that many types of bacteria may participate in the carious process. The variable action of the several types of microorganisms on the different tissues of teeth indicates that carious lesions in different anatomic locations may have diverse etiologies, arising from the actions of many types of microorganisms acting singly, jointly or consecutively.

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Investigation of the nutritional requirements of the oral spirochetes

Edward G. Hampp. *Internat.A.D.Res. Preprinted Abst.* 95 March 21, 1957

The oral treponemas and borrelias constitute a little understood group of organisms, and information concerning their nutritional requirements is scanty. Many attempts have been made at the National Institute of Dental Research to grow these organisms in various chemically defined mediums, without success. More recently, the "synthetic" medium described by Eagle and others (1952) for the growth of the Reiter treponema and a saprophytic treponema (S69)

was employed in these studies. The medium consists of a mixture of amino acids, vitamins, purines, pyrimidines, salt mixture and crystalline bovine serum albumin.

It was found that the medium as constituted would not support the growth of pure cultures of treponemas or borrelias either under anaerobic conditions or in rubber stoppered 15 by 122 mm. test tubes filled within 1.5 ml. of capacity. It was found, however, that oral treponemas would grow well under either condition in the basic medium modified by deleting ascorbic acid, and adding 0.1 per cent glutathione and 10 per cent ascitic fluid.

Borrelia vincentii and *B. buccale* did not survive beyond 48 hours and did not exhibit visible growth. Since the medium containing ascitic fluid is not a chemically defined medium as constituted, investigations are in progress on the fractionation of ascitic fluid to identify the factor or factors required by the treponemes. It is essential to solve this problem before the nutritional requirements of the treponemas can be ascertained. These studies are being extended to include the oral borrelias.

National Institute of Dental Research, National Institutes of Health, Bethesda, Md.

Anatomy

Carabelli cusp and its interpretation

(Tuberculum Carabelli und seine Deutung)

Juray Kallay. *Österr.Zschr.Stomat.* 54:26-28 Jan. 1957

Georg C. Carabelli (1787-1842), an Austrian dentist, described a highly developed fifth cusp occasionally appearing on the mesiolingual surface of upper molars. This anomaly, later called the Carabelli cusp or tubercle, is always positioned bilaterally, and is probably caused by hereditary factors.

Morphologically, the origin of the Carabelli cusp is not clear. It seems certain, however, that this fifth cusp appears only in molars with a more or less deficient enamel development. The horns of the pulp usually are missing.

These characteristics exclude the assumption that the Carabelli cusp is a variation of a paramolar formation.

In a serial examination of 2,158 Yugoslavian children, Carabelli cusps were found in 1,125 (52.13 per cent).

The investigation was repeated with 820 children, and Carabelli cusps were found completely developed in 106, incompletely developed in 99, in the form of a fold with a slight fissure in 87, and in the form of a fovea in 12 children; all together, in almost 50 per cent. The percentage of occurrence of Carabelli cusps in 2,978 children was 51.05 per cent.

Vram reported that he found Carabelli cusps in 11 per cent of recent Europeans, in 12 per cent of fossil men, in 13.7 per cent of African aborigines, and in 5.3 per cent of Papuans.

M. de Terra found completely developed Carabelli cusps in 6.45 per cent of Europeans, and incompletely developed in 11.6 per cent.

Schwarz found Carabelli cusps in the molars of excavated Alamanni (6.6 per cent).

In 1,402 Europeans examined, Hillebrandt found Carabelli cusps completely developed in 13.6 per cent, and incompletely developed in 6 per cent.

In 2,325 Europeans examined, however, Bolk found completely developed Carabelli cusps in 17.4 per cent, and incompletely developed in 44.2 per cent.

In 765 persons of different racial and geographic origin, Lenhossék found Carabelli cusps in 37.5 per cent, and hardly any in Papuans.

According to Bolk and Adloff, Carabelli cusps do not occur in apes and monkeys with the exception of chimpanzees and gibbons. Lemurs show a cusp formation resembling the Carabelli cusp on all upper molars.

Adloff maintains that the Carabelli cusp occurs far more frequently in primitive people, and that, therefore, this anomaly can be considered an atavism.

The Russian anthropologist Batujew, however, found Carabelli cusps in 50 per cent of Russian children and adults. His observation is almost identical with the Yugoslavian result of 51.05 per cent.

It seems inconceivable that such large parts of the human population are in a period of gradual degeneration or retrogression. On the contrary, it can be supposed that the evolutionary progress in man is not completed, and that the currently more frequent occurrence of Carabelli cusps presents a symptom of a final, progressive evolutionary development in recent man.

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Pathology

Etiology, pathogenesis and treatment of erythredema polyneuropathy

(Zur Ätiologie, Pathogenese und Therapie der Feerschen Krankheit)

P. Stelgens. *Deut.med.Wschr.* 82:378-381 March 15, 1957

Previously reported studies on the syndrome of erythredema polyneuropathy (Feer's disease) and the recent investigation of 17 patients hospitalized at the Pediatric Clinic of the University of Heidelberg, Germany, have established that this disease is caused by subacute or chronic mercury poisoning of children, usually occurring after application of medicaments containing mercury. A comparatively small dose of 0.05 Gm. of mercurous chloride as in calomel may produce severe toxic effects.

The Swiss pediatrician, Emil Feer, after whom Feer's disease is named, described this syndrome in 1942. He observed vasomotor and emotional disturbances, irritability, tachycardia, hypertension, photophobia, pink itching extremities, stomatitis, excessive salivation, loss of hair and teeth, and necrosis of bones.

At the clinic, treatment with dimercaprol was successful in eight instances, questionable in three, and unsuccessful in five. In nine patients treated with cortisone, some success was obtained in three.

In instances of erythredema polyneuropathy, dimercaprol should be injected intramuscularly in doses of 2.5 mg. for each kilogram of body weight four times daily for four days. The same dose is administered twice daily for the subsequent four days.

After the eighth day, cortisone should be added at an initial dose of 100 mg. daily, which dose can be decreased gradually until cure is obtained.

After the tenth day, dimercaprol-cortisone combinations are administered orally for from 8 to 14 days.

Systematic search for mercury in the patient's urine is the most reliable source for diagnosis and differential diagnosis in which neurovegetative disturbances (acrocyanosis), tuberculosis, syphilis, intestinal catarrh, measles, influenza, gastritis and bronchitis should be considered.

Dimercaprol was developed during World War II as an effective agent against local and systemic actions of arsenic gases. This drug now is used effectively as an antidote to mercury poisonings.

The result of the investigation indicates that the use of drugs containing mercury and of dental amalgams should be limited, especially in dental and medical treatments of children.

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Progress in oral pathology (1952-1955)

R. Frank. *Internat.D.J.* 7:1-25 March 1957

The developments in oral pathology since 1952, the date of the last Fédération Dentaire Internationale Congress in London, are reported under the headings of dental pathology, pathology of the soft tissues of the oral cavity, pathology of the maxillae, pathology of the mandibular joint, pathology of the salivary glands, pathology of the nervous system, allergy and drug intolerance, and effects of radiation on the tissues of the oral cavity.

Numerous observations have added to the knowledge of anomalies in the development, structure and form of the teeth. Further dental dysplasias have been described by Rushton (1954). Experiments have shown the importance of dental tissue cultures and attempts at transplantation. Relationships between the dentition and the endocrine system have been described. Selye (1953) has demonstrated the importance of stress and of the general adaptation syndrome in

oral pathology. Takahara (1953) has described a new stomatological affection, characterized by gangrenous lesions of the oral and nasal mucosa, and caused by an absence of catalase in the blood. A hereditary malformation of the oral frenums has been reported by Papillon-Leage and Psaume (1954).

Craniofacial malformations, fibrous osteopathies and tumors of dental origin have been studied. Extensive clinical investigations on the problem of cancer of the oral cavity have been conducted. The relation between the salivary glands and the endocrine system has been explored. First reports on the delayed effects of atomic explosions on the dentition have been published by Decoursey, Terasaki and Tomisaki.

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Affections of the temporomandibular joint

George T. Hankey. *Proc.Roy.Soc.Med.* 49:983-999 Dec. 1956

One hundred and fifty patients with temporomandibular arthrosis were seen in the five years prior to April 1953.

Women were affected three times as often as men. Of the 150 patients, 57 per cent developed symptoms from adolescence to age 30, during the years when the permanent teeth are erupting or are in position; only 4 per cent developed symptoms after age 50. Most of the 150 patients sought treatment within six months of the onset of symptoms, but only 6 per cent within a few days, indicating that few had severe initial symptoms.

Unilateral or bilateral clicking in the joint without pain was the most frequent complaint, accounting for 30 per cent of the patients, whereas 27 per cent had a click associated with pain. The remaining 43 per cent had no clicking but had a variety of other symptoms, mostly confined to the immediate region of the joint. Only nine patients complained of deafness, tinnitus, lingual or other symptoms stressed by Costen. Twenty-three patients complained of fifth nerve neuralgia without any other symptoms; it is these patients who present the greatest difficulty in diagnosis.

Thirty-seven per cent of the patients reported onset of the symptoms was sudden; the remainder reported a gradual onset. Only 20 per cent of the symptoms could be attributed to extrinsic injury; the remainder of the symptoms were due to intrinsic trauma.

As a diagnostic point, if there is clicking of the joint and overclosure is suspected, the patient, after his jaw clicks, is asked to close on the thin handle or blade of a knife placed between the back molars. This will prevent the overclosure and on opening from this new starting point the click may be abolished. In such instances the prognosis of a cure by a bite opening splint or prosthesis is almost assured.

Of the 150 patients, treatment was completed in 125; of these 125, 72 per cent were cured, 20 per cent were much better, and 8 per cent were failures. Twenty patients, or 16 per cent, underwent surgery of the joint.

In the next series of 262 patients, treatment was completed in 190; of these 190, 170 (89 per cent) were cured, 15 were improved and 5 (2.6 per cent) were no better. Of the 170 cured, the condition resolved naturally in 21; in 122 patients conservative measures—onlaid prostheses, cuspal grinding, dentures and immobilization—were used; three were cured by operation and prostheses, and 15 by the extraction of third molars or other teeth. Of the 262 patients, 209 were women and 53 were men. By comparison with the first 150 patients, the percentage of cures in the second series is 16 per cent, and only six patients (3 per cent) required surgical treatment.

It is clear that conservative treatment is successful in an average of 80 per cent of patients.

Malocclusion in one form or another, with resultant condylar displacement, is the main etiologic factor in temporomandibular dysfunction.

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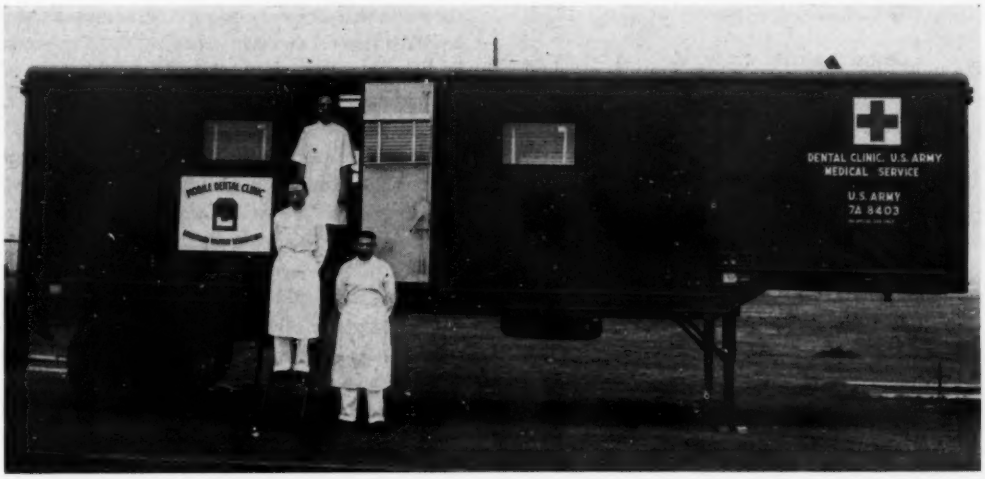

Professional activities

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Dentistry in government

Army mobile dental clinics

Harold G. Ott. *U.S.Armed Forces M.J.* 8:893-895 June 1957

The first of 12 dental operating vans designed to serve Army Antiaircraft Command personnel at isolated locations throughout the United States was placed in operation in the Second Army area at Lordstown Military Reservation, Warren, Ohio, in February 1957. This mobile dental clinic eventually will serve Nike missile units in the Cleveland, Ohio, area as well as its parent station.

These vans, officially listed as "dental operating clinic, semitrailer mounted: two chair," have been developed to provide service and facilities comparable to those of fixed installations. The 30-foot vans are equipped with standard dental chairs, units, cabinets and all accessory items so that two dental officers or an officer and a dental hygienist can be employed simultaneously. Other features include dental roentgenographic equipment, a combination laboratory and darkroom, and air conditioning. Although self-contained, the vans are equipped with utility outlets, including telephone, in order that they may operate either independently or from outside electrical and water sources.

The heretofore widely dispersed location of most Nike missile sites has required personnel to travel great distances and be absent from their place of duty for prolonged periods, in order to obtain dental care at a fixed facility.

The vans will visit each antiaircraft site on a scheduled itinerary. Visits of from ten days to two weeks will enable the dental surgeon to conduct a dental survey at the site and apportion his time and efforts accordingly. Patients requiring extensive or complicated treatment beyond the capabilities of the mobile facility will be referred to a fixed installation for such care. It is estimated that return visits can be made on an average of every three or four months.

Headquarters Second Army, Fort George G. Meade, Md.

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Dentistry around the world

Short biography of the late Dr. Ichigoro Nakahara

Japan Oral Topics 3:16-17 April 1956

Ichigoro Nakahara, founder and first dean of the Nippon Dental College, was born in Nagano prefecture on May 15, 1868. After finishing a primary school course in 1879 he became a pupil of Yoshikata Toda of Nagano, a court physician to the Lord of Nagano. In 1883 Nakahara went to Tokyo to enter the Seishin School (Earnest Advancement School) to study English and the Chinese classics. The next year Nakahara met Kiyoshi Okada, a samurai of the Takada clan of Kyushu and a practicing dentist. Nakahara began studying dentistry with Okada. After three years, Nakahara opened his own dental office in Tokyo. He was one of 14 dentists then practicing in Tokyo. In 1889 he passed an examination for a license to practice dentistry.

In 1900 he was elected a member of the Kojimachi Ward Assembly, where he stressed the importance of regular oral examination of school children. He succeeded in establishing a primary school dental service in Kojimachi Ward. From this project developed today's school dental service which extends throughout Japan.

Nakahara then founded an educational organization for dentists serving in the school dental system. This organization was named Hatsukakai and later renamed the Japan Dental Education Association, of which Nakahara was elected as president. In 1907 the association adopted a resolution to found a dental school, an action sanctioned by the Tokyo prefectural authorities. On July 2, 1907, the Kyoritsu Shika-Igakko (Joint Dental School) was founded at Otemachi, with 70 students attending. This was a high school with a two year course. The curriculum was established with the advice of Hisashi Ishihara, professor of oral surgery at the Faculty of Medicine at the Imperial University of Tokyo.

In 1909 the school was made a dental college with a three year course leading to the degree of Doctor of Dental Surgery. The system was similar to that then prevailing in the United States. In 1910 the course was extended to four years, and the school was authorized by the Ministry of Education to license its graduates to practice dentistry.

In 1947, in accord with the advice of the Council on Education of the Occupation Government, Japan's educational system was revised. The dental school adopted a six year course, was recognized as a class A college and was formally approved as a dental college of university standard by the Ministry of Education.

Nakahara made many trips to the United States and to Europe, and sent his colleagues abroad to study advanced dentistry and to attend dental congresses. In 1916, the Baltimore College of Dental Surgery, University of Maryland, conferred on him the honorary degree of Doctor of Science. He was also awarded the Senior Grade of the Sixth Court Rank and the Fifth Order of Merit of Japan.

Ichigoro Nakahara helped to consolidate the dentist's professional rights in Japan. He died in 1941 at the age of 74. Minoru Nakahara, present dean of the Nippon Dental College, is the eldest son of Ichigoro Nakahara.

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Study of oral health in Antarctica

W. R. Stanmeyer and David Knoedler. *Internat. A.D.Res. Preprinted Abs.* 81 March 21, 1957

In November 1955 the U.S. Navy Dental Corps ordered a dentist to "winter over" with a group of 92 men preparing for the International Geophysical Year at McMurdo Sound, Antarctica. Shortwave radio communication with McMurdo Sound and Little America had revealed that many dental problems exist. Some dental problems were attributable to the cold weather (−70° F. to −100° F.), some to the rising wind and chill in warmer weather (−20° F.) and others to the stress of living in isolation throughout the Antarctic night.

It has been ascertained that liberal cement bases are essential under all fillings for insulation, and that on persons acclimated to the cold procaine hydrochloride must be used without epine-

phrine for local anesthesia to prevent a shock reaction. As the winter night continued, gingival breakdowns occurred with increasing regularity. The number of dry sockets after extractions was far above that considered normal in warmer and less isolated communities. During the period in which the men remained indoors, the cariogenic activity increased, and there was a noticeable increase in carbohydrate consumption and smoking. Oral hygiene appeared to be good. When persons with defective dental work left the warmth of the quarters and spent as many as 12 hours working at −50° F., dental complaints increased; in one day four men sought dental treatment, all of whom had had fillings fall out. The tendency of acrylic dentures to fracture also appears to be a problem under these conditions of extreme low temperatures.

U.S. Naval Medical Research Laboratory, New London, Conn.

The first all-Russian conference of stomatologists and dentists
(Pervaja vserossijskaja konferentsija stomatologov i zubnych vratshej)

Stomat., Moscow 36:79-82 Jan.-Feb. 1957

The first all-Russian conference of stomatologists and dentists was held from December 8 to 12, 1956, in Moscow, with 329 delegates and many guests in attendance. Objectives of the conference included the following: (1) survey of dental health in the U.S.S.R.; (2) discussion of the treatment of caries and its complications; (3) discussion of the treatment of periodontal disease, and (4) adoption of statutes and election of staff members of the All-Russian Stomatological and Dental Association. Efforts were made to develop more effective dental treatment for the population.

The Ministry of Health was asked to urge all local health organizations to carry out the dental aid plan in accordance with articles 282 (1955) and 141 (1956) of the Health Act. It was recommended that the organization of polyclinics with departments of conservative, surgical, prosthodontic and pedodontic dentistry should be the first step toward the development of the dental health program. Special attention is to be given to the arrangement of mobile dental clinics with portable equipment, for use in remote communities. It was recommended that in large cities with inadequate facilities for dental care, clinics be established for patients able to pay. Dental treatment in all areas, it was recommended, should be placed under control of a district stomatologist.

The conference recommended that postgraduate educational facilities be expanded so that dentists could be trained to the level of stomatologists. Inasmuch as few dentists have qualified in the specialties of dentistry, it was recommended that advanced specialty training be made available, first at the Leningrad and Stalino institutions. It was further recommended that each polyclinic provide refresher courses in dentistry, and that particular attention be given to assigning dental practitioners to those areas in special need of dentists. Improvement in the training of dental laboratory technicians was urged.

Dental health education is to be stressed for preschool and school children, draftees, expectant mothers and industrial and farm workers. The Ministry of Health will be asked to institute a dental health program on a nation-wide basis. It was recommended that more attention be given to the treatment of deciduous teeth and to the prevention and correction of malocclusions.

The conference proposed use of the quality index issued by the Ministry of Health in 1951 to control and evaluate dental treatment, and suggested that dentists be encouraged to reduce the length of treatment by using more effective methods, such as antibiotics, local anesthesia and physiotherapy. It was suggested that the chief dentists of the polyclinics throughout the country re-examine fees for orthodontic work, and that fees be lowered according to the 1951 directive of the Ministry of Health. Free prosthetic and orthodontic care for war veterans and children was recommended, with the expenses to be anticipated in the budgets of local communities. Expansion of the dental health education program was urged.

More dental research was proposed, with co-ordination of the research now being carried out in several medicostomatological institutions through regular meetings and discussions.

The Ministry of Health is to be requested to

give immediate attention to improving the production of dental equipment, instruments and materials, especially of handpieces, contra-angles and burs. Dental laboratories should be equipped with modern necessities, and there should be no delay in manufacturing and supplying gypsum, it was urged.

Prof. A. I. Bvdokimov was elected president of the All-Russian Association. A. A. Kovner was elected secretary, and I. I. Revzin was elected treasurer.

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Hospital dental service

Exploring the Massachusetts General Hospital dental internship program

Norman Trieger. *Harvard D.Alumni Bul.* 17:21-22 April 1957

From among more than 200 applicants, two dental graduates are selected each year by the Massachusetts General Hospital for one year of training. The program is recognized by the American Dental Association and the specialty Board of Oral Surgery. The program is designed to teach oral disease and its treatment on the broad base of medicine and surgery. The intern assumes his role in the hospital community on a par with all other interns, entitled to the same privileges and responsibilities. Regarded as the specialist in his chosen field, he is also expected to participate in activities which will familiarize him with general disease processes. The dental intern attends a variety of conferences, including pediatric grand rounds, tumor conferences, surgical grand rounds, medical grand rounds and clinicopathologic conferences.

The dental intern must care for patients seen each morning in the outpatient clinic, admit those patients who require general anesthesia into the hospital, and do the standard hospital "work-up" which includes a review of the present illness, past history, review of systems, physical examination and laboratory tests. He then schedules the patient with the operating room service and performs the necessary surgery with the advice and guidance of a member of the teaching staff. He also follows the postoperative course of each patient.

The two dental interns are responsible for the inpatient care of about 250 patients per year. This, plus the experience in the dental clinic, accounts for an estimated 6,000 extractions per intern per year. The hospital treats an average of 40 fractures of the jaws and facial skeleton each year. In the year the intern will have participated in at least 15 open reductions and have been surgeon in a few such operations. Each intern spends six weeks on the anesthesia service, giving anesthetics to all types of surgical patients.

The private pavilions of the Baker Memorial and the Phillips House are affiliated with the Massachusetts General Hospital. Staff dentists and oral surgeons admit about 400 patients each year. The intern is expected to "work up" each admission and assist the surgeon at operation. The intern is responsible for interpreting each roentgenogram he orders. He must check on the findings in connection with each biopsy specimen. He attends the tumor clinic weekly and follows patients who are seen and treated for oral malignancies. He is responsible for the diagnosis and treatment of dental patients seen in the emergency room at any time, day or night. He is asked to see, on consultation, an estimated 300 patients with a variety of oral problems, in all departments of the hospital. The intern is expected to present interesting case material and a review of the literature to the assembled dental staff each Monday morning.

Because there are only two dental interns, they are on duty each day, and on alternate nights and Sundays. The intern works under conditions which demand almost perpetual activity. Chronically fatigued but well fed and clothed, his salary is a standing joke as is his home life.

When the year is over he will have seen and treated practically all possible dental complications. He will have learned a new approach to disease based on association with some of the best medical, surgical and research faculties available.

357 Harvard Street, Cambridge, Mass.

Licensure

New regulations on licenses for dentists: the Ministry of Health will organize courses for dental competence

(Nuevas disposiciones sobre licencias para odontólogos: cursos de capacitación organizará el Ministerio de Salud)

Bol.dentalcoblan 3:41-42 Nov. 1956

A new law, no. 3134, concerning the license to practice dentistry (and other professions linked with medicine) in Colombia was recently enacted. It makes the granting of licenses, hitherto a function of the National University, a function of the Ministry of Public Health. Henceforth the university will issue diplomas to the students on graduation and will approve the diplomas of those persons (Colombian or foreign) who graduated from universities in foreign countries. The Ministry of Public Health will establish programs of courses leading to dental competence for those individuals who are practicing and have applied for licenses.

The new law is of importance to a large number of recently graduated dentists who have already applied for a license. It is a modification of several previous laws concerning dental practice on the basis of certain legal requirements of the applicants. These laws have been enacted, repealed and re-enacted several times in the past.

Under the present law, the diplomas of dentists who graduated from Colombian faculties recognized by the state will be recognized by the Ministry of Public Health on legal routine procedures. The same will apply to the diplomas of Colombian or foreign persons who graduated from universities in foreign countries and whose diplomas were approved by the National University. The National University is responsible for the approval of diplomas from foreign countries by following the regulations of internal educational laws according to international agreements or treaties on the interchange of diplomas for the practice of liberal professions. In all circumstances, copies of data backing the resolutions of the National University in approving foreign diplomas will be provided for the Ministry of Public Health and of National Education for records of legalization.

Practicing dentists who apply for a license will be required to take an examination testing their education, competence in dental work, scientific knowledge, personality, years of experience and so forth. The applicants who pass the examination will be given a license to practice dentistry provided that, at the same time, they attend the courses of competence mentioned above. These courses are aimed at enabling dentists practicing without a license to obtain knowledge in dental technics, dental surgery, preventive dentistry, periodontics and other subjects of public dental health in which the applicants are at present wanting. The applicants will be examined according to clause no. 5 of Law 124 of 1954. The courses of competence and the examinations will be given by dentists who are professors in dental schools.

Literature

Dental library service: yours for the asking

Donald A. Washburn. *Illinois D.J.* 26:7-10 Jan. 1957

Any member of the American Dental Association may obtain any dental book published, by written or telephoned request to the Association's Bureau of Library and Indexing Service, 222 E. Superior St., Chicago 11, Ill. Books also may be purchased at list price through the Bureau.

The Bureau also offers the facilities of a national bibliographic dental center and dental film center, staffed by 17 members, including 6 with specialized backgrounds in library services, audiovisual services, indexing, history and nomenclature.

The principal activities and services of the Bureau are as follows:

1. Library and indexing services: Circulate

books and package libraries from a basic collection of more than 10,000 volumes and 2,000 package libraries on 570 separate topics; make available all the United States dental journals (about 150) and dental journals from abroad (about 200); provide individual reference services to members, and prepare the *Index to Dental Literature* in the English language which is kept current in quarterly cumulations. An annual volume contains about 5,700 references covered by about 11,250 author and subject entries.

2. Audio-visual services: Maintain collections of 156 titles and 823 prints of motion pictures, 39 titles and 130 sets of slides, and 9 titles and 66 prints of filmstrips. This represents the world's most extensive dental film collection. Provide information on sources of audio-visual material and equipment; provide assistance in motion picture programming, and issue lists of films available for television.

3. Consultative service in nomenclature and history.

4. Maintain Association's archives.

5. Publications: *Index to Dental Literature*, and lists (free) of audio-visual materials in dentistry, available books and package libraries for dentists, a classification for dental literature, dental journals published outside the United States and its territories, editors of dental journals, and selected list of dental journals.

222 East Superior Street, Chicago 11, Ill.

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Miscellaneous

The 1956 survey of dental practice. VII. Number of patients and patient visits

J.A.D.A. 54:691-694 May 1957

The mean number of patients treated or examined in the office during 1955, reported by nonsalaried dentists to the Bureau of Economic Research and Statistics of the American Dental Association, was 1,056. The median of 796 patients better describes the typical dentist, and a large percentage of dentists reported less than half this number.

The mean number of patient visits was 2,977, or 2.8 visits per patient, the same ratio as was found in 1952.

In 1952 the mean and median numbers of patients were 1,012 and 724; the mean number of patient visits was 2,872. The percentage increase in mean number of patients during the three-year period was 4.3 per cent.

Dentists in the Southeast region averaged about twice as many patients as dentists in the Middle East. The ratio of number of patient visits to number of patients varies from a high of 3.9 in the Middle East to 3.3 in New England, 2.7 in the Far West, 2.6 in the Central region, 2.4 in the Northwest, 2.4 in the Southeast and 2.2 in the Southwest.

Dentists practicing in residential districts tended to have fewer patients than dentists in downtown or other business districts.

The number of patients treated annually by a dentist tends to increase with the dentist's age until age 50; thereafter the number declines in each higher age group. Dentists 70 and over reported almost exactly as many patients as dentists age 25 to 29.

Whereas the oral surgeons reported a mean of 2,130 patients in 1955, the orthodontists reported a mean of only 311 patients.

A large part of the total variation in number of patients is explained by the size of the office, that is, number of personnel employed and number of dental chairs. The mean number of patients increased from 704 for dentists with no employees to 2,430 for dentists with 3.5 or more employees.

Based on the mean of 1,056 patients reported by private practitioners in this survey, it is estimated that 73,000,000 persons, or 45 per cent of the civilian population, saw the dentist during 1955. These figures compare with estimates of 65,000,000 persons or 42 per cent in 1952, and 60,000,000 persons or 40 per cent in 1949.

222 East Superior Street, Chicago 11, Ill.

Oral surgery

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Roentgenology

Adjustable universal film holder

Harry H. Benkow. *D.Radiog.& Photog.*
30:25-26 April 1957

Many kinds of film holders have been devised to keep roentgen-ray film packets in correct position within the mouth. The common purpose of such holders has been to help hold the packet flat and thus help prevent distortion caused by bending.

Intraoral dental films are made in a number of "standard" sizes ranging from ⅞ by 1⅝ inches for a child patient to 2¼ by 3 inches for occlusal roentgenograms. Until now, it has been impossible to use a single film holder for all types of roentgenography and all sizes of film. A film holder that can be adjusted for all intraoral films except the occlusal film is described (Fig. 2).

Construction of the holder is shown in Figure 1. The film rests against a stiff, flat metal backing. On the back there is a threaded pin and two guiding rails for the divided film support. Each has a straight slot for the pin and two tenons. These tenons slide in the two eccentric slots in the adjusting wheel. The parts are held together and locked in position by a thumbscrew.

It is easy to change from one size to another, or to place a packet on either its long or short

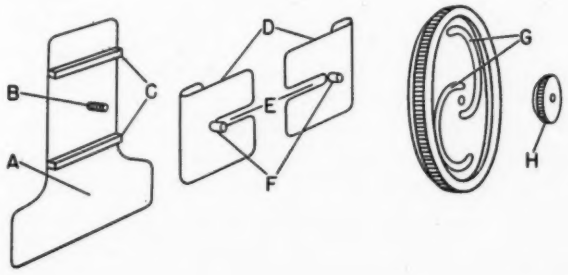

Figure 1 Construction of film holder. A = flat metal backing. B = thread pin. C = guiding rails. D = divided film support. E = slot of thread pin. F = tenons to slide in eccentric slots. G = eccentric slots. H = thumbscrew to hold parts together and lock in position

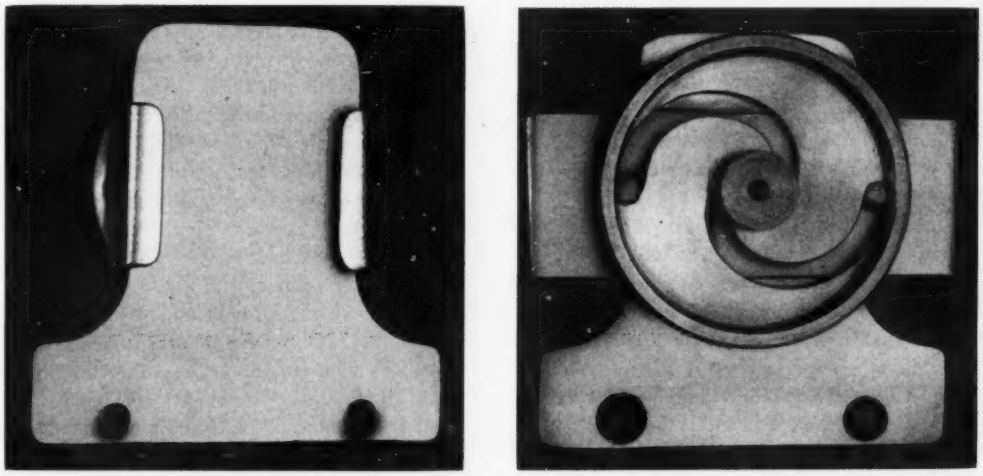

Figure 2 Left: Front view of holder adjusted to smallest film size. Right: Rear view of holder adjusted to largest film size

axis. The change from largest to smallest holder size requires only a half turn of the wheel. The packet is centered automatically, which permits use of the film holder for stereoscopic and periodic-identical roentgenography. The holder can be used alone or attached to a bite plate (for impressions, and so forth); or it can be applied to mechanical appliances, such as those sometimes used in the long cone technic or in routine roentgenography.

Norwegian State Dental School, Oslo, Norway

Contact therapy.
Physical concepts (Contactoterapia. Conceptos físicos)

L. A. M. Barbero and S. M. de Almenara.
Rev.A.odont.Argentina 44:386-393 Oct. 1956

Contact therapy is indicated in superficial lesions, lesions which can be reached by natural or surgical approach and lesions located in the mouth. The radiations used should not reach the normal tissues beneath the lesion which is under treatment. Therefore the coefficient of penetrability of the radiations should be minimal. Soft rays between 50 and 60 kv. are used, and the radiations are given with the x-ray tube in contact with the lesion as much as possible. Contact therapy acts similarly to radium therapy but with radiations having greater wavelength.

Chaoul apparatus for roentgenotherapy by contact has several inconveniences: (1) partial loss of the soft constituents of roentgen rays due to filtration through the metallic tube (equivalent to filtration through a 0.2 mm. nickel filter) and (2) water refrigeration which makes the tube heavy and awkward to manipulate.

The Phillips-Metalix apparatus delivers an excellent output of radiations. The tube is refrigerated by an air current and is easy to manipulate. The anode constitutes the axis of the apparatus. It is isolated from the wall of the tube by a glass cover. It is a solid piece of tungsten mounted in metal and activated by a difference of potential of 50 kv. with respect to the cathode. The generated roentgen rays pass through a metallic sheath which is covered by a plastic material "Philite," which prevents filtration of soft rays. The range of rays used may vary from soft to harder; this can be achieved by increasing the distance between the focus and the skin or by using filters of various thicknesses. Eight localizers of different sizes and openings of different diameters and two aluminum filters, 2.5 mm. at the center and 2.2 mm. at the periphery and 1 mm. at the center and 0.85 mm. at the periphery, respectively, are provided.

The apparatus is constructed in such a way that the rays at the edge of the beam diverge 70 degrees to allow applications on extensive fields. The difference of quantity of radiations delivered by central rays and rays at the edge of the beam is compensated by using aluminum filters thick at the center and thin at the periphery to favor homogeneous radiation. The peripheral regions of a field of radiation given without filter at a distance of 40 mm. from the anode receives 85 per cent of the dose of radiation of the central region of the field. In similar conditions but with a filter, the peripheral regions of hypodosages are restricted to smaller regions and are marked.

A study of the coefficient of absorption of radiations by water proved that, without a filter, the percentage of absorption of radiations delivered is 40 per cent at a depth of 5 mm., 20 per cent at a depth of 10 mm. and 7 per cent at a depth of 20 mm. With a localizer of 20 mm. and an aluminum filter of 2.5 mm., the figures are 64 per cent of the total quantity of radiation delivered at a depth of 5 mm., 44 per cent at 10 mm. and 18 per cent at 20 mm. The radiation that is dispersed on the water surface is insignificant.

The secondary radiation generated between the roentgen rays and the localizers when radiations are given at a distance of 40 mm. from the anode is high. In some instances it is as high as 25 per cent of the primary radiation. A study of the secondary radiation from the localizers showed that nickel-plated bronze localizers produced 19 per cent and 13 per cent additional radiations working without and with filters, respectively. Chrome-plated bronze localizers with a film of aluminum applied over the chrome diminished additional radiations to 3 per cent when filters were not used, and additional radiations disappeared entirely when filters were used.

There is no danger of electrical shock from the apparatus, all the metallic parts of which are

grounded. The roentgenologist, however, is in danger of scattered radiations unless he takes the necessary precautions. According to the figures put forth and authorized by the *Manual for Protection of American Roentgenologists,* the personnel working with roentgen rays at doses of 0.3 r a week should be kept at a minimal distance of 1 meter from the end of the x-ray tube. When the technic suggested by the manufacturers is followed by holding the tube with the hand, the maximum period of time for a worker is 20 minutes a week. Scattered radiation greatly increases when the target-skin distance and the thickness of the filters are increased. Therefore it is advisable to use screens on the cover of the tube and on the skin of the patient a lamina of lead provided with an orifice the size of the lesion to allow for passage of the roentgen rays into the region under treatment.

Gaona 1679, Buenos Aires, Argentina

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Surgical technics

Fracture of the midline of the mandible associated with complete unilateral dislocation of the jaw

Ian H. Heslop. *Brit.J.Plast.Surg.* 9:129-135 July 1956

The combination of fracture of the body of the mandible, with dislocation of one condyle from the glenoid fossa, in the absence of an associated fracture of the neck of the condyloid process or the adjacent ascending ramus, appears to be uncommon. No record has been found in the literature of such a fracture, and it does not fit into the usual classification of fractures and fracture dislocations of the mandible. It is for these reasons that the following two cases are reported.

Case 1. A 17 year old boy collided with a motorcar while riding a bicycle. He was unconscious for a few minutes after the accident, but was fully conscious and cooperative on admission to the hospital half an hour later, though he remembered little of the accident.

Clinical and roentgenographic examinations revealed the midline fracture of the mandible, with a separate triangular bone fragment, and dislocation of the right temporomandibular joint without fracture of the neck of the condyloid process.

Under endotracheal anesthesia the wounds were cleaned, and interdental eyelet wires were applied to the posterior teeth in all quadrants of the mouth. Intermaxillary tie wires were loosely placed. All fragments of loose bone and teeth were removed together with several teeth which had been much loosened in the regions adjacent to the shattered teeth.

The main mandibular fracture was then examined and found to be in the shape of an inverted Y, with the arms of the Y enclosing the loose triangular bone fragment. This fragment included the genial tubercles and was considered viable. Lower border wiring was carried out between the triangular fragment and the major fragment on each side, a simple direct loop being used on the right side and a direct and a figure-of-eight loop on the left. The dislocation was reduced, and it was then possible to reduce and maintain the fragments in perfect position by means of the lower border interosseous wires. Immobilization was completed by twisting up the intermaxillary wires, which brought the teeth into occlusion.

The soft tissues were restored to their position and the wounds closed in layers. One pint of whole blood was given during the operation.

Postoperative roentgenograms showed a satisfactory position of the fragments. The intermaxillary fixation was removed, and the fracture was found to be firmly united in good position six weeks after operation.

Case 2. This patient also was knocked off a bicycle by a motorcar. Clinical observations suggested a fracture of the middle third of the facial skeleton, the maxilla being mobile, and in addition there was an alveolar fracture in the upper left molar region. The midline of the mandible was fractured, the left side being displaced downward 1.5 cm. below the right in the incisor region. Roentgenographic examination confirmed the fractures of the frontal bone, maxilla and the midline of the mandible.

Metal cap splints were constructed for all segments of the fractured jaws. These were ce-

mented to the teeth, and a plaster headcap was applied as a means of fixation of the fractured maxilla. The maxilla then was gently reduced and fixed to the headcap attachments by means of rods secured to Kingsley bows on the upper splint, and intermaxillary elastic traction was applied to reduce the mandibular fracture.

Under endotracheal anesthesia all fixation was removed, and manual reduction of the mandibular fracture was attempted. It then became apparent that the left temporomandibular joint was dislocated, and this dislocation was reduced without much difficulty. The mandibular fracture came into good position after this procedure, and some improvement of the position of the maxilla was obtained by manipulations; the intermaxillary and craniomaxillary fixation was replaced. For the latter only an anterior bar was used from the headcap to the upper splint, the Kingsley bows being discarded.

The patient made satisfactory progress. He was discharged four weeks after operation, at which time the maxilla was firm. All fixation was removed at the sixteenth postoperative week when the mandible was firm.

Withington Hospital, Manchester, England

Great auricular neurotomy for tic douloureux: a controlled clinical trial

John Penman and L. S. Walsh. *Brit.M.J.* No. 5009:22-25 Jan. 5, 1957

Wyburn-Mason (1953) reported that he had treated about 56 patients suffering from tic douloureux by interruption of the great auricular nerve. Each patient first received an alcohol block of that nerve, and about half were completely relieved, "provided the tongue was not involved." In patients treated by alcohol block alone, the pain may return after 6 to 18 months, Wyburn-Mason reported. When the pain had returned, or if it had not been initially relieved, he treated it in some instances by a further alcohol block and in others by surgical section of the nerve. Twenty-five of his patients received this surgical treatment, of whom two had had some return of pain.

Between August 1954 and May 1955, the authors treated 23 patients with severe tic douloureux by great auricular neurotomy; 16 other patients, comparable in all essentials with the first 23, were left untreated. In each of these 39 instances, the patient, when first interviewed, had his name put on a waiting list for trigeminal injection, which he was left free to postpone if his pain had abated sufficiently. In 22 of the 23 patients in whom neurotomy had been performed (95.7 per cent), trigeminal injection had to be carried out at most 85 days later, and in 14 of the 16 patients in whom neurotomy had not been performed (87.5 per cent), it had to be carried out at most 148 days later. The average interval between entry into this clinical trial and injection was 21.4 days in the 22 patients treated by neurotomy and 22.1 days in the 14 patients untreated by neurotomy. One severe condition treated by neurotomy and one equally severe condition not treated by neurotomy were on the right and left sides of a single patient. Twenty-one other patients with milder tic douloureux were similarly divided into 12 treated and 9 untreated patients and left to decide when they must undergo trigeminal injection, with similar results.

Great auricular neurotomy, to judge from this trial, has no effect on tic douloureux.

Royal Marsden Hospital, London, England

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Surgical pathology

Tetanus after tooth extraction
(Odontogener Tetanus)

Norbert Zylka. *Neues Zahnhk.* 3:96, 1957

Tetanus is a specific disease caused by the *Clostridium tetani* and its soluble exotoxins. This disease is characterized by muscular rigidity and spasms. The almost constant involvement of the muscles of the jaw accounts for the term "lockjaw" which is conventionally used to designate tetanus.

The most significant predisposing factor is a wound which permits entrance of the spores of

Cl. tetani into human tissue. Such a wound may be trivial or severe, varying from a simple superficial abrasion to a complicated deep laceration.

Occasionally, the sources of tetanus infection are wounds sustained in tooth extractions, injections or injuries accidentally inflicted during dental treatment.

The period of incubation is related to the speed with which dangerously high amounts of tetanus toxin are released from the point of injury.

In about 20 per cent of tetanus patients, there are short incubation periods of between 2 and 5 days; in 60 per cent, intermediate periods of from 6 to 15 days, and in the remaining 40 per cent, periods of from 16 to 85 days. The immediate use of tetanus antitoxic serum may prolong the incubation period.

In the case reported, the patient was a four year old girl who exhibited, after multiple tooth extractions and surgical elimination of a dental abscess, the following symptoms: (1) rigidity of the body musculature; (2) trismus; (3) *risus sardonicus;* (4) difficulty in swallowing; (5) backache; (6) rigidity of the abdominal wall, thorax, extremities and neck, and (7) spasm of the muscles of the bladder and bowels.

Treatment consisted of antitoxic serum, sedative drugs, antibiotics, conservative care of the wounds in the oral cavity, measures to prevent dehydration and starvation, and constant medical and nursing attention.

The healthiness of the patient, absence of severe convulsions and complications, comparatively slight difficulties in mastication, a long incubation period, a slow progressive course of the disease and the expert treatment favored a good general outlook.

Two weeks were required for complete recovery.

Prevention of tetanus in dental practice includes the following basic factors: (1) control of all dental procedures to reduce opportunities for infection; (2) immediate and correct treatment of all wounds, and (3) protection through use of tetanus antitoxin.

Despite the high, world-wide incidence of tetanus, comparatively few patients develop this disease after tooth extraction or oral surgical procedures.

Annostrasse 3, Siegburg, Germany

▼ Extractions

The use of elevators

James R. Hayward and Emmett R. Costich.
Pract.D.Monogr. 3-29 March 1957

The skillful use of elevators is a helpful adjunct to forceps manipulation in removing teeth. Elevators also provide the means to apply forces in inaccessible regions.

Most elevators use the mechanical principles of both the wedge and the lever. The instrument is first seated by wedging and then used as a lever.

Elevators may be classified by shape, as follows: (1) gouge; (2) triangle (Cryer); (3) pick (Crane, periapical), and (4) half-round (Spear or LeCluse).

The elevator is an auxiliary instrument, being used in most instances in conjunction with forceps, chisels, burs and rongeur forceps. In a few instances, such as in the removal of third molars of suitable form and position, the elevator may be the only instrument used.

The most common use of the elevator is for luxation of teeth in preparation for removal with forceps. The gouge is gently worked into the space between the tooth and the mesiobuccal alveolar margin and rocked slightly. Once firm resistance is encountered, the elevator is moved to the distobuccal and then the buccal surface of the tooth, so that at least three points of application have been made.

The elevator also may be used to expand the alveolar plate away from the tooth. The third major use is in elevation.

When the elevator is used as a wedge, three principles must be kept in mind:

1. A site for effective force application must be chosen.

2. Adjacent walls must be of suitable resistance.

3. The tooth must have an unobstructed path of exit.

Three principles also must be observed in using the elevator as a lever:

1. A site for effective force application must be selected, or prepared by drilling a traction hole, and so forth.

2. A fulcrum suitable to withstand the applied force must be selected.

3. The tooth must have an unobstructed path of exit.

Among the specific applications described and illustrated are the following: use of the periosteal elevator; preliminary luxation of teeth with gouge elevators; wedge action of the gouge elevator; elevation of the most distal tooth with a gouge elevator; traction holes for pick elevators; use of elevators in combination with sectioning in the removal of teeth with multiple divergent roots, and use of pick elevators for the delivery of fractured root apexes.

School of Dentistry, University of Michigan, Ann Arbor, Mich.

Tooth extraction in hemophiliac patients
(Zahnextraktion bei Hämophilie)

J. A. Orr and A. S. Douglas. *Zahnärztl.Praxis* 8:9-10 June 1, 1957

Surgical interventions in hemophiliac patients present many problems; the most frequent difficulty appears to be the safe management of tooth extractions.

At the department for oral surgery of the Dental School of the University of Glasgow, Scotland, 57 tooth extractions in ten patients with hemophilia were carried out. The number of tooth extractions performed in one hemophiliac patient varied from one to seven.

In the majority of instances, the postoperative hemorrhage expected occurred three days after tooth extraction. In one patient, however, hemorrhages could not be checked before the seventeenth day. It appeared inadvisable to extract more than two teeth at a time; whenever indicated, two adjacent teeth were extracted.

Acrylic splints were used to protect the site of extraction and the surrounding tissues. Black gutta-percha pegs were inserted into the splints opposite this site.

Blood replacement consisted of 1,140 ml. of fresh frozen plasma, which was injected immediately before and after tooth extraction. The procedure was repeated in all instances in which postoperative hemorrhage occurred.

Antibiotics were administered orally for five days after tooth extraction.

Safe management of tooth extractions in hemophiliac patients offers a real challenge to dentistry. Only in attaining this goal will it fulfill its moral and professional obligation.

Renfrew Street, Glasgow C 3, Scotland

▼ Plantation

Complete lower subperiosteal implant denture inserted in a dog: histopathologic findings
(Impianto completo sperimentale su cane: controlli istopatologici)

C. Zerosi, A. Borghesio and A. Baratieri. *Rass.trim.odont.* 37:50-93 Oct.-Dec. 1956

At the Dental Clinic of the University of Pavia, Italy, a complete lower subperiosteal implant denture was inserted in a dog. Because of previous clinical experience with subperiosteal implants, the implantation of a mesh substructure was the method of choice to permit the rational distribution of masticatory pressure.

The implant denture was left in position for two and a half months. No complication was observed. The dog then was sacrificed, and its mandible together with the implant was dissected. A series of anterior incisions performed in previously established planes permitted the removal of the various fragments from the host tissue without altering their topographical relation with the site of the implant.

Around all the Vitallium meshwork fragments which had been in close contact with the osseous tissue, a mass of closely packed collagenous fibers was observed. This fibrous mass exhibited a thick epithelial covering consisting of several layers of squamous epithelium.

Inflammatory processes such as a parvicellular infiltration into the connective tissue were observed only in the fibromembranous regions in proximity to the implant and parts of the collage-

nous fibers which were in constant contact with the foreign body. In deeper regions and between the different parts of the subperiosteal implants, there was no inflammation.

A strong red-cell diffusion had taken place mainly in the superficial region of tissues composed of membranes and fibers, probably caused by trauma. This process was accompanied by slight hemorrhages.

The osseous tissue showed an almost perfect tolerance to the inserted Vitallium substructure. The phenomenon of resorption was absent. New formation of osseous and collagenous tissue at the site of the implant was evident. This occurred mainly in proximity to the mandibular cortex, and was probably caused by transformation and calcification in the deeper regions of the collagenous fiber bundles which had connected the implant to the bone.

Further studies with experimental animals of different species will deal with the development of new osseous tissue after insertion of subperiosteal implant dentures.

Clinica odontoiatrica dell'Universitá di Pavia, Italy

Subperiosteal implants and "superplants"
(Impianti sottoperiostali e "superplant")

G. Dahl. *Rass.trim.odont.* 37:25-36
Oct.-Dec. 1956

In dental literature, the first reports on the successful construction and insertion of subperiosteal implants made of alloplastic material appeared in 1940. In these and the immediately following experiments to find a method for replacement of missing teeth by direct subperiosteal implants, the form and shape of tooth roots were imitated.

After these introductory experiments, it seemed clear that not the shape but the function of tooth roots should be imitated. It was also observed that the insertion of subperiosteal implants made of metal was tolerated by the tissue only temporarily. After a certain period, resorption occurred in the majority of instances.

At the Carolina Hospital in Stockholm, Sweden, a new type of subperiosteal implant, called "superplant," was developed by the author. It consists of a fixed saddle attached to one or more abutments. This superplant is provided with "spurs" which act as subperiosteal retention devices and prevent the implant from being elevated from the mucous membrane.

In all instances in which superplants were inserted, no resorption occurred. The healing of tissue surrounding implants and spurs was uneventful, rapid and painless.

Patients who had received partial superplants instead of partial dentures or customary subperiosteal implants appeared to be completely satisfied.

To obtain a favorable result, however, an accurate adaption of superplant and denture is required which can be achieved best with a base made of cobalt-chromium-molybdenum alloy, and by using the "button technic."

Karolinska Sjukhuset, Stockholm, Sweden

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Anesthesia and analgesia

Alarming sequelae of an inferior alveolar nerve block simulates Horner's syndrome

A. E. Dodds. *J.D.A.South Africa* 11:385-386
Nov. 1956

A student administered a left inferior alveolar nerve block while the rubber dam was in position on the second mandibular molar on the same side. Thirty-five minutes after the injection there were still no signs of anesthesia in this region; instead, the patient complained of blurred vision of the left eye, blocking of the left side of the nose, dizziness, impaired hearing of the left ear and difficulty of speech which he described as "speaking with half a voice." The pupil of the patient's left eye was constricted to pinhead size with a visible resting ptosis of the same eye. The blood vessels of the left eyeball were congested, the eyeball being bloodshot so that the entire visible sclera was a dark blue color. Both sides of the face were equally damp to the touch.

The student stated that, because of the pres-

ence of the rubber dam, he had had difficulty in observing the correct landmarks for this injection; that the needle had penetrated the tissues for about one and a quarter inches and that he had injected the solution without having had the point of the needle in contact with bone. The anesthetic solution obviously had been deposited close to the internal carotid nerve plexus and immediately adjacent structures (including the superior laryngeal nerve).

The patient was assured that there was no cause for alarm. He was detained for two hours, at the end of which time he had recovered completely.

No reference to a similar incident can be found in the literature. Similar instances may have occurred, but either were not diagnosed or the need for a report on the condition was not recognized.

Since the symptoms of the condition are alarming to both the patient and the dentist, this case emphasizes the importance of meticulous technic when blocking an inferior alveolar nerve. Symptoms of such an alarming nature, if experienced by an elderly, ill or nervous patient, could have serious consequences.

The case presented three features of Horner's syndrome, myosis, ptosis and a suggestion of enophthalmos. Anhydrosis did not appear because the sympathetic nerves distributed with the external carotid artery and its branches were not involved.

Department of Dentistry, University of the Witwatersrand, Johannesburg, South Africa

Fatal anaphylactic reaction to lidocaine

Leslie M. Morrisset. *U.S.Armed Forces M.J.* 8:740-744 May 1957

It is believed this is the first reported instance of a death attributed to lidocaine anaphylaxis.

A 20 year old man was given approximately 0.8 ml. of 2 per cent lidocaine hydrochloride with epinephrine 1:50,000 in preparation for an operative dental procedure. About 45 seconds after the injection he was asked, because of his paleness, if he felt faint. Before he could answer he became unconscious, his breathing became irregular, and he went into convulsions, which were transient. At this point artificial respiration was started. The patient was deeply cyanotic and, except for an occasional gasp, appeared to be dead. A medical officer who happened to be in the building gave the patient caffeine with sodium benzoate. No change occurred and the patient was pronounced dead.

On two other occasions in the preceding two weeks the patient had received injections of lidocaine hydrochloride with epinephrine from the same lot that was used on the day of his death. The previous injections did not produce toxic symptoms.

No topical anesthetic solution was used on any of the three occasions. Thimerosal was used as an antiseptic solution but no premedication was employed.

The only pertinent findings at autopsy were subepicardial and myocardial petechial hemorrhages, mild cerebral edema and noticeable congestion of the meningeal and intracerebral vessels.

Any patient receiving a medicinal agent may have an anaphylactic reaction which creates a medical emergency. In many instances the survival of the patient hinges on immediate recognition and vigorous treatment by the operator. The dentist and physician must be prepared to treat these reactions and must know their early signs and symptoms.

A first abnormal sign may be mild drowsiness, followed by mild facial twitchings, cyanosis of the nail beds and mucous membranes and a gradual increase in somnolence.

Powell and Nowill (1953) recommend that the following equipment be available for treating patients having reactions to lidocaine: face mask with a breathing bag, source of oxygen, a short acting barbiturate, vasopressor drugs, appropriate syringes and needles, endotracheal tube and laryngoscope.

Anaphylactic reactions are treated similarly, even when caused by different agents. Epinephrine and hydrocortisone have been used intravenously with good results. Epinephrine is employed to relieve the severe bronchiolar spasm seen in many of these patients.

1418 Teton Drive, El Cajon, Calif.

Armamentarium

▼

Equipment

Clinical experience with the impression trays "Jescoform" and "Jescoplast"

(Unsere Erfahrungen mit den "Jescoform-" und "Jescoplast-" Abdruckslöffeln)

Egon Banger. *Deut.Zahnärztebl.* 10:448-451 June 22, 1956

According to many reports in dental literature, attempts to make alginate impression materials adhere to the customary types of impression trays have frequently failed even when these trays are perforated.

The three main disadvantages of these trays have been described as follows: (1) alginate impressions were accurate only if a comparatively strong pressure was exerted and maintained during impression taking; (2) the adhesion of the alginate material frequently was inadequate because the material was cut off by the sharp edges of the perforations, and (3) impressions of the buccogingival folds often were inadequate because the edges of most of the customary trays were too narrow.

In the prosthetic department of the dental clinic of the University of Münster, Germany, the applicability and practicability of the recently introduced impression trays, "Jescoform" and "Jescoplast," each set consisting of 24 different tray forms, were examined.

The wide range of tray forms permitted a more individual selection than had been possible previously.

The design of the Jescoform trays includes a special notch for the impression taking of ligaments. The marginal curves rise steeply on both sides, continuing at maximum height until the

Figure 1 "Jescoform" impression trays for upper jaws. 1 = for complete dentition; 2 = for partial dentition; 3 = for deciduous dentition; 4 = for edentulous jaws, and 5 = for irregularities of the teeth and malocclusions

Figure 2 "Jescoplast" impression trays for lower jaws. 1 = for complete dentition; 2 = for partial dentition; 3 = for deciduous dentition; 4 = for edentulous jaws, and 5 = for irregularities of the teeth and malocclusions

Figure 3 Development of the outer walls of the "Jescoform" and "Jescoplast" trays; dotted line indicates border of customary trays

region of the second bicuspids is reached. After a dip, to include the ligaments, the edges again rise slightly to obtain an accurate impression of the molar region.

Specially designed types of both the Jescoform and the Jescoplast trays are available for (1) complete dentition; (2) partial dentition; (3) edentulous jaws; (4) deciduous dentition, and (5) irregularities of the teeth and malocclusions.

The shape of tray handles and the fact that they are fitted to the tray bottoms had certain advantages since they were readily accessible and permitted easy manipulation and unrestricted natural lip movements.

Both tray types have been used exclusively at the dental clinic of the University of Münster for more than two years. Accurate impressions were obtained without difficulty, not only by skilled and experienced operators, but by most of the young dental students.

It was found that with these trays, no auxiliary procedures such as adjusting the wall height with thermoplastic material were necessary.

Cleaning of these trays is simple and can be done rapidly. The spiral springs, that permit an excellent adhesion of alginate material, are practically indestructible. There appears to be no need to attach strips of adhesive plaster to these trays.

Questionnaires were sent by the author to many dental clinicians and practitioners, and the answers received almost unanimously stated that in Jescoform and Jescoplast trays, most of the defects of the earlier impression trays have been eliminated.

It seems justified, therefore, to recommend that the customary impression tray types, although they were suitable in their time, be replaced with these new tray sets which will fulfill more completely the requirements of present-day prosthetic dentistry.

Marktstrasse 14, Ahaus/Westfalen, Germany.

Materials

A study of the physical properties of elastic impression materials and stones

George M. Hollenback. *J.South.California D.A.* 25:20-28 Jan. 1957

Four types of elastic impression materials used in dentistry were investigated, in a research project which is not yet completed. The progress report includes the following findings:

1. A wide variation exists in the accuracy of reversible hydrocolloids, irreversible hydrocolloids, rubber base material and silicone base material.

2. In rubber base materials a large shrinkage occurs during the gelation period and continues as a constant factor for a considerable time, to render these materials of doubtful value for general use in restorative dentistry. In tests made over a period of seven days, the material was still shrinking at about the same rate at the end of the period. It did not seem worthwhile to prolong the tests, as at the expiration of one week the materials had shrunk from 25/1,000 to 30/1,000 per inch.

3. Reversible hydrocolloids are inaccurate. Even the best one tested failed to meet simple tests for accuracy. Some on the market are exceedingly inaccurate and perhaps unfit for use.

4. Irreversible hydrocolloids (alginates) are greatly superior to the reversible types in accuracy. Not all such materials, however, are equally accurate, and all have the following disadvantages:

Generally, impressions cannot be stored without introducing an element of possible error. Stones do not set perfectly in contact with irreversible hydrocolloids. In some irreversible hydrocolloids the set is bad and in others it is fairly good, but in none is it perfect. This does not preclude their use in crowns, bridges and partial dentures but is a disadvantage in single tooth restorations.

5. A silicone base material seems to be greatly superior to all other materials. Its cast accuracy is excellent, stone set is satisfactory, and impres-

sions can be stored for a long time and still retain their accuracy. Several casts can be made of the same impression and all will be equally accurate. Only inexpensive equipment is required with silicone base material, and the technic is simple and easily mastered.

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▼ Therapeutics

An antibiotic for oral and topical application

(Ein Antibiotikum zur oralen und lokalen Applikation)

K. M. Brunthaler. *Zahnärztl.Rundschau* 65:317-318 July 5, 1956

Oxytetracycline (Terramycin), a yellow, odorless, crystalline powder, is isolated from the growth products of the actinomycete, *Streptomyces rimosus*. This antibiotic is effective in destroying or inhibiting the growth of a wide range of bacteria, a few types of rickettsiae, viruses and protozoan microorganisms.

Oxytetracycline usually is administered orally, but can be used intravenously or topically in suitably prepared solutions.

This antibiotic, marketed as oxytetracycline hydrochloride (Terramycin hydrochloride), appears to be an excellent choice in the treatment of oral infections, ulcerative stomatitis, ulceromembranous gingivitis and postoperative complications caused by bacteria which are resistant to penicillin and streptomycin.

One gram of crystalline oxytetracycline hydrochloride contains 30 mg. oxytetracycline in which a hydrogen atom is replaced by a hydroxyl group and 10,000 units of polymyxin B sulfate. The inert substance consists of lactose.

Within ten months, 226 patients suffering from a variety of dental infections were treated by the author with crystalline oxytetracycline hydrochloride, orally or topically applied.

The best results were obtained when this antibiotic was used as an adjuvant after oral surgical intervention. In two instances, the antibiotic failed to arrest the formation of exudates. Success was achieved after additional doses of oxytetracycline hydrochloride in capsule form.

The dose of oxytetracycline hydrochloride used was 1 Gm. daily. It was administered in divided doses every six hours with a glass of milk.

In all instances of painful, persistent or recurrent oral ulcerations, treatment with oxytetracycline resulted in a rapid clearing up of the pathologic condition.

Some patients experienced mild gastrointestinal disturbances, but none had skin rashes or drug fever.

Karl Marx Platz 2, Berlin-Neukölln, Germany

Sedation of children as outpatients for dental operations under general anesthesia: trial of methylpentynol, butobarbitone and chlorpromazine

R. Goulding, P. J. Helliwell, A. C. Kerr and Eileen M. Wilkin. *Brit.M.J.* No. 5023:855-860 April 13, 1957

Although preoperative sedation for dental outpatients requiring general anesthesia is not commonly used, it is strongly advocated by Macintosh and Bannister (1952). It has been advocated as a method of reducing the emotional disturbances of a child about to undergo what otherwise may be a frightening experience and as a way to reduce the outward expression of such emotions.

An investigation was undertaken at Guy's Hospital to study the effect of the preoperative administration of three drugs to child outpatients attending for dental extractions under general anesthesia.

The double blind technic was used. An arbitrary scale of behavior was chosen, with calm cooperation at the top, violent obstruction at the bottom, and one intermediate grade. The behavior of each of 357 children was recorded before and after premedication. The following three drugs, with their respective dosages, were used: (1) methylparafynol: 11.8 mg. per kilogram; (2) butethal: 3.1 mg. per kilogram, and (3) chlorpromazine: 0.8 mg. per kilogram.

None of the three drugs could be distinguished from a placebo by their effect on the behavior of children about to be anesthetized. What seems to be much more important than attempted preanesthetic sedation by means of drugs is the age of the children. Those over six years old behave in an almost unexceptional manner, and for them premedication is almost unnecessary. Below this age, any method of improving behavior would be an advantage. The three drugs tested scarcely provide the answer.

This study is concerned with behavior and not with anxiety, the latter being much more difficult to assess.

Guy's Hospital, London, England

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Miscellaneous

Integral asepsis in dental treatment of patients with tuberculosis

(Desinfekčni roztok účinkujici na tuberkulosni bacili: předběžná zpráva)

J. Šimsa and A. Dozertova. *Českoslov.stomat.* 57:21-22 Jan. 1957

Dental treatment of patients with tuberculosis requires that not only the instruments and the hands of the dentist and his assistant are made sterile but also the operating room and the air. Impression materials and models especially must be made completely free of living pathogenic microorganisms.

Most antiseptics and germicides used in dental practice are either ineffective against *Mycobacterium tuberculosis* or cause serious and sometime irreparable tissue damage. Some sterilizing agents even corrode dental instruments.

At the Dental Clinic of the University of Prague, Czechoslovakia, the following compound is used successfully for integral asepsis before, during and after treatment of patients with tuberculosis: formaldehyde solution, 37 per cent, 80 ml.; liquefied phenol, 10 ml.; ethyl alcohol, 70 per cent, 500 ml.; sodium nitrate, 20 ml.; anhydrous sodium tetraborate, 20 ml.; glycerin, 10 ml., and purified water, 400 ml.

This antiseptic compound has the advantage of great stability, convenience of preparation and the maximum bactericidal effect. It is relatively nontoxic and nonirritating.

Výzkumný ústav tuberkulosy, Prague 8, Czechoslovakia

An evaluation of lubricants for dental handpieces and contra-angles

G. T. Charbeneau and F. A. Peyton. *J.D.Res.* 36:479-491 June 1957

A representative group of lubricants for the dental handpiece and contra-angle was evaluated. The viscosities of the liquid petroleum lubricants ranged from light oils to heavy oils at 70° F., but became much less widely dispersed as their temperature approached the operating temperature of the bearings. The greases reacted as a medium viscosity oil.

The fluids investigated for use as sterilization mediums were either not stable or were of too great viscosity to provide good lubrication. A few of these synthetic fluids had some favorable characteristics and should be investigated more thoroughly.

Stoddard Solvent readily removed the petroleum and synthetic lubricants from the disassembled handpiece and contra-angle. This solvent is of relatively low toxicity and with reasonable precautions should present no great fire hazard. Ethyl alcohol may be used as a secondary cleaner to remove moisture from gears and bearings.

Highly refined oils of a viscosity less than 150 Saybolt Universal Seconds appeared to provide acceptable lubrication in the three handpieces tested, when applied sparingly to the disassembled instrument. Molybdenum disulfide appeared to lubricate stainless steel on Pyrex sleeve bearings when used according to the manufacturer's instructions.

The light oils provided adequate lubrication for the gears and bearings of three contra-angles tested when sparingly applied directly to these parts.

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Preventive and public health dentistry

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Caries etiology and control

Characteristics of caries development in rats placed on a cariogenic diet for an extended period
(Osobennostji razvitija kariesa zubov u laboratornych krys pri dlitelnom primeneniji kariosnoi diety)

S. A. Nikitin and M. G. Bugaev. *Stomat., Moscow* 6:3-7 Nov.-Dec. 1956

The metabolic activities of animals placed on a cariogenic diet were investigated to discover whether the effects of the unusual nourishment were reflected in following generations.

White rats were placed on a diet consisting of 24 per cent washed and dried cottage cheese, 67 per cent sugar, 5 per cent sunflower oil, 4 per cent salt mixture, from 2 to 3 Gm. whole wheat bread and polyvitamins in tablets. The salt mixture was composed of 100 Gm. sodium chloride, 3 Gm. calcium chloride, 0.5 Gm. magnesium chloride, 0.5 Gm. potassium chloride, 0.5 Gm. monopotassium dihydrogen phosphate, 0.5 Gm. calcium sulfate, 0.1 Gm. powdered sulfur and traces of zinc, copper, cobalt and ferrous chloride.

The offspring grew on the same diet. Four generations of the animals were studied in two series. The animals were killed at intervals of from 120 to 200 days. The jaws with teeth were removed and fixed in 10 per cent Formalin. Sections were stained with hematoxylin and eosin.

Only a few animals of the first offspring had some carious enamel and dentin in the fissures of molars. Studies of the second generation of parents raised on that diet revealed that the teeth in all animals were decayed. The third generation showed a definite decrease in caries incidence. Twelve of the 26 rats of this group were caries-free, two had infected dentin and the rest had only superficial signs of caries. In the fourth generation few teeth affected with caries were noted.

The first generation averaged 2.5 per cent carious teeth; the second, 7.3 per cent; the third and the fourth, 1.1 per cent.

Premature wear of teeth in all rats was found to be associated with the morphologic changes of the enamel of animals placed on the diet.

The animals were not underweight, did not show anomalies of the jaws or skeletal bones, or any dysfunction of internal organs.

The conclusions were as follows:

1. The four generations of experimental rats placed on a cariogenic diet showed the highest caries incidence in the second generation and the lowest in the third and fourth generation.

2. The lower caries incidence in the third and fourth generations indicate the adaptation of animals to the unusual nutrition.

3. Sugar enriched food does not appear to be a strong factor in caries development, independently of the make-up of the body.

Fluoridated sodium chloride: large scale tests in Switzerland
(Schweizerischer Grossversuch mit fluoriertem Kochsalz)

Ch. Böhne. *Zahnärztl.Praxis* 7:8 June 15, 1956

For various reasons, particularly because no centralized water supply exists in the majority of villages and towns, the feasibility of a general fluoridation of drinking water in Switzerland is doubtful.

The Swiss federal government has decided to test the practicability of another method, the addition of fluoride to table salt, on a comparatively large scale. The aim of the Swiss public health authorities is to make fluoride as a caries-preventive medium, available to the entire population.

In Switzerland's larger cities, Zurich, Basel, Geneva, Bern, Lausanne and Lucerne, fluoridation of drinking water may be introduced at a later date.

On July 7, 1955, the Swiss government authorized the cantonal administration of salt works to offer to the public, as a test, a new type of table salt which contains fluoride and iodine. The result

of this test should determine whether it is possible to prevent caries and struma simultaneously. This type of salt is sold at the same price as regular salt.

For these tests, 200 mg. of sodium fluoride is added to each kilogram of sodium chloride. The average consumption of table salt in Switzerland is 9 Gm. per diem and capita. It is assumed that each person will receive from 0.7 to 0.9 fluoride ppm daily. Even though some persons may consume a high amount of salt, the fluoride intake still will be far below the dangerous dose of 2 ppm.

The city of Wädenswil in Canton Zürich was the first to participate in these tests. Later, many other communities followed.

At Wädenswil, 530 households with 900 children now are using fluoridated table salt. The children's teeth are examined periodically by dentists under the supervision of the cantonal health authorities. The results of these examinations are recorded for future publication. Serial roentgenograms of all teeth are taken. Nine hundred preschool and school children consume fluoridated salt regularly, and 700 children, serving as a control, regular salt.

All data will be examined and evaluated by the staff of the Dental Institute of the University of Zurich.

The total expense of this first important step in the large scale tests amounts to 14,000 Swiss francs (about $2,800).

13b München-Gräfelfing, Germany

The intermediary metabolism of tryptophan and pyridoxine and its relation to dental caries
(Contributio sperimentale allo studio del metabolismo intermedio del triptofano e della vitamine B 6 nei soggetti cariosi)

E. Magri. *Acta stomat.,Padua* 4:265-275 Oct.-Dec. 1956

A number of clinical and laboratory studies have been reported which indicate that a possible relation exists between the intermediary metabolism of tryptophan and vitamin B_6 (pyridoxine) and dental caries.

At the Dental Clinic of the University of Padua, Italy, serial examinations have been carried out to establish whether this assumption can be substantiated.

After urinary elimination of xanthurenic and cynurenic acids in 30 persons (15 patients with severe carious lesions serving as an experimental group, and 15 persons who were comparatively free of caries serving as a control group), the possible relations between the intermediary metabolism of tryptophan and pyridoxine and dental caries were investigated.

No correlation between the DMF index established and the metabolic variations could be determined in both groups after allowances had been made for the individual susceptibility or resistance in the persons examined.

Alterations in the intermediary metabolism of tryptophan and pyridoxine had no effect on the solubility of enamel, and neither a reduction nor increase in caries incidence was observed.

From this evidence it can be concluded that no relation exists between dental caries and the intermediary metabolism of tryptophan and pyridoxine.

Via Montona 4, Padua, Italy

The condition of the cavitation
(Les conditions de la cavitation)

Ch. Leimgruber. *Actual.odontostomat., Paris* 10:7-16 March 1957

Although the classical theories of Miller and Gottlieb on the etiology of caries describe adequately the causative factors in the formation of cavities, the main problem, the origin of caries, still remains unsolved.

The most essential and unanswered question is not "how does cavitation develop?" but "why does caries appear in certain teeth or groups of teeth whereas other teeth—often in the same person—are able to remain intact?"

In the tooth structure there must exist a "variable" component on which the fate of the individual tooth depends. This variable component is the ratio existing between protein and water in the hard tissue of the tooth.

Tooth protein, if hydrated, is in sol condition,

and the tooth becomes permeable for cariogenic invasion. Tooth protein, if dehydrated, is in gel condition, and the tooth is not permeable.

The presence of salt ions in saliva and tooth structure and their dissociation are decisive factors in the balance between caries susceptibility and caries resistance of individual teeth.

An important function of the salivary glands is the differentiation between the ions in blood and saliva. A particularly heavy accumulation of the ions of carbon, sodium and sulfur can be observed frequently in blood and saliva of patients with caries of the third and fourth degree. A similar concentration of these ions is necessary to obtain proper decomposition of protein in the process of food digestion.

The ions of carbon, sodium and sulfur, present in saliva, blood and tooth structure, act in an identical manner to decompose the tooth protein, and are, therefore, caries-forming agents.

The ions of phosphorus, calcium and potassium can be designated as caries-preventive agents.

Caries cavitation, therefore, is caused by an overproduction of caries-forming ions and by a simultaneous deficiency of caries-preventive ions in saliva, blood and tooth structure.

The steady increase in caries frequency is due to the unnatural diet consumed by civilized man which causes disturbances in the balance between caries-forming and caries-preventive ions.

Gurtengasse 3, Bern, Switzerland

A comparison of the Snyder colorimetric test with the lactobacillus count using Rogosa medium

Alan H. Cohen. *J.D.Res.* 36:375-381 June 1957

Two of the more widely used technics for evaluating dental caries activity are the lactobacillus count and the Snyder colorimetric test which measures the acidogenic potential of the oral flora. This study compares the results obtained in 1,049 Navy recruits by the two technics.

Three separate samples of saliva, or 3,147 samples, were collected at least one week apart from the subjects.

There appeared to be a high correlation between the Snyder colorimetric test and caries experience as measured by DMF teeth. There appeared to be a high correlation between the lactobacillus count using Rogosa medium and caries experience as measured by DMF teeth. A close parallel between the results obtained by the Snyder test and the lactobacillus count using Rogosa medium appeared to exist. There seemed to be a high degree of reproducibility of both the Snyder test and the lactobacillus count when based on obtaining the same test results on two out of three different salivary samples from the same patient.

U.S. Naval Training Center, Bainbridge, Md.

A new synthesis of 5-fluorovaleric acid and its ester and glyceride and their use for hardening the tooth and for prophylaxis of dental caries

Erwin Ott, Georg Piller and Hans Joachim Schmidt. *Helv.Chim.Acta* 39:682-685 May 1956

Fatty acids containing fluorine substituents at odd carbon atoms such as 3-fluoropropionic acid or 5-fluoro-n-valeric acid are nontoxic. On the other hand fluorine substituents on the even carbon atom are toxic, probably because β-oxidation can lead to the highly toxic fluoroacetic acid.

5-fluoro-n-valeric acid was synthesized from readily available tetrahydrofuran in good yields by the following reactions:

$$C_4H_8O \xrightarrow[(AlCl_3)]{HCl} Cl(CH_2)_4OH \xrightarrow[PBr_3]{} Cl(CH_2)_4Br \xrightarrow[]{NaCN}$$

$$Cl(CH_2)_4CN \xrightarrow[KF]{} F(CH_2)_4CN \xrightarrow[HCl]{H_2O} F(CH_2)_4COOH$$

Esters can be obtained by reaction of alcohols with the nitrile intermediate. The acid can be converted to the glyceride by the action of glycerin with thorium dioxide as catalyst.

Experiments with rats fed fluoridated fats showed that fluorine is resorbed quickly. Incorporation of 1 mg. of fluorine per day as fluoridated fat leads, after a few weeks, to an analytically detectable increase in the fluorine content of incisors. Microsections of teeth show that in contrast with inorganic fluorides such as sodium or calcium fluoride, which under certain conditions

may cause trouble in the calcification of teeth, no detrimental effects are observed after feeding of fluoridated fats. For hardening the enamel of teeth, incorporation of fluoridated fats may be a more suitable method than fluoridation of drinking water.

Caries-preventive effect of magnesium fluoride orally administered to adults

(Zur kariesprophylaktischen Wirkung peroraler Magnesiumfluoridgaben beim Erwachsenen)

A. Knappwost and A. Effinger. *München.med.Wschr.* 98:1542-1545 Nov. 9, 1956

The American scientist, H. Trendley Dean, and his collaborators were the first to establish that a specific relation exists between the fluoride content of drinking water and the incidence of dental caries. Dean's primary report describes investigations made of 7,257 school children in 21 American communities.

At the department for physical chemistry of the University of Tübingen, Germany, animal experiments with 109 Syrian golden hamsters have been undertaken recently. This rodent shows caries symptoms similar to those appearing in human adults.

The animals were one month old. In hamsters of this age, the teeth are completely formed and erupted. The caries-preventive effect of orally administered magnesium fluoride, therefore, could be evaluated only in erupted teeth.

The animals were divided into four groups as follows: (1) hamsters receiving a normal diet (oatmeal, wheat, corn, dog biscuits, shrimps and vegetables); (2) hamsters receiving a cariogenic diet mixed with water free of fluoride; (3) hamsters receiving a cariogenic diet, and a daily injection of 0.02 mg. magnesium fluoride, and (4) hamsters receiving a cariogenic diet and an orally administered dose of 0.05 magnesium fluoride daily.

Group 2 was considered in this experiment to have the standard caries incidence of 100 per cent. In Group 3 a reduction of 73 per cent, and in Group 4 one of 87 per cent, was observed.

From the results of the animal experiments, the following conclusions were reached: (1) Knappwost's "resistance theory" was completely verified; (2) the frequently discussed exchange of ions (fluorine ions with hydroxyl ions) is of secondary importance in caries prevention, and (3) the reduction in caries incidence in adults of from 25 to 30 per cent by orally administered magnesium fluoride is not only possible but probable.

Klinikumsgasse 12, Tübingen, Germany

The Evanston dental caries study. XV. The caries experience rates of two groups of Evanston children after exposure to fluoridated water

I. N. Hill, J. R. Blayney and W. Wolf. *J.D.Res.* 36:208-219 April 1957

This paper reports the findings of the 1953 and 1954 dental examination of continuously resident Evanston children six to eight years old and 12 to 14 years old. The data are compared with those of children of the same age examined in the study in 1946. The 1953 group was exposed to fluoridated water for from 71 to 82 months and the 1954 group for from 83 to 94 months at the time of the dental examinations.

The rate of dental caries in the permanent teeth of the children six to eight years old was reduced 57.59 per cent after 71 to 82 months of fluoridation.

The six year old children showed a reduction in caries rates of the deciduous teeth considered to be borderline statistically. The change in caries rates of the deciduous teeth of the seven and eight year old children is not significant.

After from 83 to 94 months of fluoridated water, the dental caries experience rates in the permanent teeth of 12 to 14 year old children were reduced about 21.96 per cent.

The reductions in caries rates in the maxillary anterior teeth of the children 12, 13 and 14 years old were considered significant. The differences in rates concerning the mandibular anterior teeth were not significant.

The permanent tooth surfaces with pre-carious lesions (per hundred children) in 1954 totaled about a half of the number found in 1946.

The number of immune permanent dentitions increased over 200 per cent for the 12 and 13 year old children. These increases are considered significant. The 85.15 per cent increase for the 14 year old children is not significant.

The percentage changes associated with the caries rate of the permanent teeth are only slightly dissimilar whether expressed as per hundred children, per hundred teeth or per hundred surfaces.

The percentage of children with high lactobacillus counts has steadily decreased.

The six and seven year old children in Evanston in 1953 had a lower dental caries experience rate after from 71 to 82 months of fluoridation than had the Aurora, Ill., six and seven year old children of 1945-1946 with lifetime exposure to water naturally fluoridated to 1.2 ppm.

It is anticipated that it will be at least 1957 before the caries rate of the children 12 to 14 years old in Evanston will approach the rate for Aurora children in the same age group.

Zoller Memorial Dental Clinic, University of Chicago, Chicago, Ill.

Glucose injections during the suckling period and subsequent dental caries

Ralph R. Steinman and Melvin I. Haley. *Internat. A.D.Res.Preprinted Abst.* 65 March 21, 1957

Carbohydrate solutions administered to white rats during the period of calcification of the teeth resulted in an increase in the subsequent caries experience of these teeth. A significant change occurred if the sucrose was administered from the first to the sixth day, or the seventh to the thirteenth day, or from the fourteenth to the twenty-first day after birth, compared with the teeth of littermates which had no carbohydrate added to their suckling diet.

To determine whether this change was due to a digestive or a systemic factor, the following study was completed. Nineteen animals from four litters were divided into two groups the day after birth. One group received injections of 20 per cent glucose three times a day from the day after birth through the fourth day. The second group received solutions of 20 per cent glucose orally three times a day for the same period. The amount of carbohydrate administered was about 1 to 1,000 in relation to body weight. All animals were nursed ad libitum by the mothers through the twenty-first day, at which time they were weaned and placed on a high sucrose caries diet.

At 13 weeks the animals were sacrificed and the teeth examined for caries. Those receiving the glucose orally had a score of 9.1 (after Shaw) whereas those receiving the subcutaneous injections of glucose had a score of 16.2.

Statistical analysis of this data indicated a probability of less than 0.02. This would indicate that the carbohydrate interference with the calcification of the teeth was a systemic factor and not a digestive factor.

School of Dentistry, College of Medical Evangelists, Loma Linda, Calif.

Caries-inhibiting value of a dentifrice containing stannous fluoride: first year report of a supervised toothbrushing study

William A. Jordan and John K. Peterson. *J.A.D.A.* 54:589-594 May 1957

Five hundred and five children in the fourth and fifth grades in Bloomington, Minn., equally divided between two elementary schools, provided the control and study groups for the clinical evaluation of a dentifrice containing 0.4 per cent stannous fluoride and 1 per cent stannous pyrophosphate with a pH of 4.9; the pH of the control paste was 6.8.

The identity of the dentifrice containing the stannous fluoride was unknown to the authors until after the first year anniversary examinations were completed. The children in both schools were comparable in age, sex and caries prevalence. Children in both schools brushed their teeth once a day in school after the noon meal, and also received dentifrice and brushes for home care. A mid-year study determined that comparable amounts of dentifrice were being used at home by each group.

The children in the school who used the stannous fluoride-containing dentifrice developed 35 per cent fewer DMF teeth and 34 per cent fewer DMF surfaces than the control children during

the first year of the study. These reductions are statistically significant.

Fifty-nine per cent of the children in the group using stannous fluoride dentifrice, in contrast to 44 per cent of the children in the control group, did not develop new DMF teeth.

A urinalysis in January 1956 showed no elevation in fluoride content in the group using the stannous fluoride-containing dentifrice when compared with the control. No difference in the prevalence of stain was found in the stannous fluoride and control groups.

The first year results from the Bloomington test corroborate the original work of Muhler and associates in Indiana and show the effectiveness and safety of stannous fluoride used in an abrasive-compatible dentifrice for one year.

Minnesota Department of Health, Minneapolis, Minn.

Fluoride concentration in drinking water and its relation to mottled enamel and fluorosis of the skeleton
(Soderzhanie ftora v pishchevom razione i endemicheskij fljuoroz skeleta)

R. D. Gabovich. *Voprosy pitaniia, Moscow* 4:31-36 July-Aug. 1956

The drinking water regularly consumed by the population of large areas in the Union of Soviet Socialist Republics contains a comparatively high fluoride concentration.

In the Ukrainian S.S.R., the drinking water contains 5.6 ppm fluoride; in the Russian S.S.R., 6 ppm; in the Kazakh S.S.R., 7 ppm, and in the Moldavian S.S.R., from 10 to 12 ppm.

Such an extremely high fluoride intake has influenced the Russian public health authorities to investigate whether an extremely high fluoride consumption can produce mottled enamel or promote chronic endemic fluorosis of the skeleton.

About 30 per cent of the persons examined showed dystrophies in dentition and in the skeleton. Clinical and physical examinations of children and adults, and autopsy reports, revealed that the fluoride concentration of from 2.5 to 3 ppm in drinking water did not produce significant changes in tooth and bone structures. It was established that the total amount of fluoride in the skeletons examined amounted from 2,500 to 3,000 mg. per kilogram of body weight.

Roentgenographic examinations of 283 children from areas with a drinking water content of 12 ppm fluoride showed that severe disturbances in the calcification process in teeth had occurred.

Anthropometric examination of 700 children from areas with a drinking water content of from 1 to 2.5 ppm fluoride established that this fluoride intake did not retard growth and development in teeth and bones.

The investigation of the Russian public health authorities established the fact that a dosage of from 0.7 to 1 ppm fluoride in drinking water, optimal for caries prevention, is also optimal for an undisturbed development of the skeleton.

Fluorine metabolism in the organism
(Obmen ftora v organizme)

M. I. Krylova. *Voprosy pitaniia, Moscow* 4:37-41 July-Aug. 1956

In 1952, Russian scientists established that all foodstuffs contain fluorides, and that the fluoride content of some of the regularly consumed nutritive substances exceeds the average fluoride concentration in drinking water.

The human organism receives every 24 hours from 0.8 to 1.6 mg. fluorine in its nutriment in addition to fluoride in drinking water consumed.

In animal experiments, the fluorine metabolism was studied in rats. Nine young rats, serving as controls, received in addition to their normal diet 0.01 mg. fluoride and 13 mg. calcium daily.

The experimental group received in addition to their normal diet 5 mg. fluorine as sodium fluoride for each kilogram of body weight.

The fluorine metabolism of both groups was recorded. With an extra fluorine intake (Group 2), excretion of fluorine was observed in the urine.

In a serial examination with the same animals, the influence of added calcium on the excretion of fluorine was studied. To the diet containing added fluorine, 200 mg. calcium per kilogram of body weight was added. It was established that the greatest percentage of fluorine was not discharged in the urine but was excreted in the feces. It can be assumed that under the condi-

tions of this experiment, fluorine and calcium combined in the intestines to form slightly soluble compounds.

In a third serial test with the same animals, the duration of fluorine excretion was investigated. It was established that the excretion of fluorine was prolonged.

Rats which previously had received 5 mg. fluoride daily for eight weeks, were fed a diet poor in fluoride content. Seven weeks after the fluoride administration had ceased, the animals still eliminated an increased amount of fluoride.

Similar experiments, carried out with human children and adults, brought analogous results.

▼ Nutrition

History of human nutrition

(Zur Geschichte der menschlichen Ernährung)

S. Bommer. *München.med.Wschr.* 99:357-362 March 15, 1957

The advances made in recent knowledge of nutrition have been spectacular and far-reaching. Studies of the problem of human nutrition require information and understanding of the manner in which various foodstuffs are digested, absorbed and utilized within the body, and how waste products formed by activities of tissues are eliminated.

The diet of civilized people errs mainly in containing an excess of cereals and starchy foods and a deficiency of unadulterated animal and vegetable foods. Sugar, especially in the diet of children, is often consumed in excess.

Normal human diet should be nutritionally efficient, should ensure adequate exercise of the jaws, and should promote cleanliness of the oral cavity. In all these respects, the customary diet of civilized people fails. The result is observable in a narrowing of the jaws and a shocking condition of deciduous and permanent teeth.

Evidence indicates that most civilized people eat too much rather than too little.

History proves that in ancient people, especially Greeks and Romans, excessive food consumption was one of the causes in their decline.

Recent developments in the nutritions of Europeans and Americans show that a dangerous similarity exists between their dietary habits and standards and those of ancient Greece and Rome immediately before and during the periods of decline. Basically identical trends to weight excess, caused by an abnormally high but often nutritionally inadequate food intake which probably was due to psychogenic and not to endocrinic or heredofamilial factors, were observed then and are observable now.

Research on the nutritional habits of aboriginal tribes in Africa and Australia have revealed that the natives are able to preserve their normal form of nutrition far better than members of the white race residing in the same regions.

All trends in the nutrition of civilized people point to the fact that a diet originally rich in ingredients essential for health and life is gradually altered to a diet which is deficient in all essential substances.

Impairment in general health and efficiency, caused by faulty nutrition, occurs frequently, resulting in an enormous increase in the incidence of dental caries, malformation of the jaws, tuberculosis and malignant tumors.

Dental and medical research must look for an adequate remedy to counteract this threat to civilized man brought on him by his civilization.

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Soil and health

Editorial. *Brit.D.J.* 102:61-62 Jan. 15, 1957

A "Public Declaration by Five Hundred Doctors and Dentists" of Great Britain asserts that not only the yield but the nutritional value of foods are influenced by the amount of organic manure added to the soil on the farms where the foods are produced. Some protagonists of this idea have maintained that many of the present-day diseases and much vague ill health are caused by foods grown on land treated with artificial fertilizers. Opponents of this view, and they include many

scientific agriculturists, deny the nutritional inadequacy of foods grown with artificial fertilizers.

The Declaration draws attention to the pioneering experiment undertaken by the Soil Association at the Haughley Research Farm in Suffolk, believed to be the only such experiment in the world.

Ideally, research on this topic should include three stages: (1) comparison of the chemical analysis of animal and vegetable foods produced on plots receiving various manurial treatments; (2) feeding tests over many generations of experimental animals, and (3) since the results of animal experiments (especially in dental problems) cannot necessarily be assumed to apply to man, controlled feeding tests on human subjects extending over many years.

The Declaration states that the agricultural practices under discussion are of importance to the medical and dental professions, and some eminent dental surgeons have been associated prominently with the organic movement. The relevance of these ideas to the many unsolved problems of dental health, however, must remain speculative owing to ignorance of the relation between the composition of diet and dental effects.

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School dentistry

Malocclusion in school children of the West Midlands

D. H. Goose, D. Glen Thomson and F. C. Winter. *Brit.D.J.* 102:174-178 March 5, 1957

In the course of routine school dental inspections, 1,536 boys and 1,420 girls 7 to 15 years old in five areas, both urban and rural, in the West Midlands of England were examined for orthodontic defects and the malocclusions recorded. Angle's classification was used. The following findings are reported:

1. Malocclusions were found in about 44 per cent of the 2,956 children examined.

2. A higher percentage of malocclusion, particularly of Class II, Division 1, and Class I (with crowded dentition), was found in town children than in rural children.

3. No significant differences in malocclusion as related to sex were found except at age 14, when the incidence of Class II, Division 1 malocclusion was 10.2 per cent higher among boys than among girls.

4. A small number of children 12 years old were examined to find the percentage of children with malocclusion that needed appliance treatment. It was found to be about 20 per cent. It is estimated that about 15 per cent of all children both require and would accept appliance treatment.

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▼

Public health dentistry

Grants-in-aid in federal-state dental public health program relationships

Norman F. Gerrie. *J.A.D.A.* 54:182-188 Feb. 1957

The federal grant-in-aid system is a method, devised 38 years ago, for the purpose of equalizing, between the poorer and the more wealthy states, the burden of financial support for state and local governmental health services. The grants system has been effective in stimulating the establishment of new health programs, improving existing programs, raising standards of operation, and securing and training personnel.

To qualify for grant funds, the state or community must submit a plan for the proposed project. Funds are allotted to the states in the form of grants, and are then reallotted to local health agencies or expended in direct state services. Matching funds from state and local sources are required to obtain grant funds. The granting agency influences the grant program by requiring that the grant recipient adopt certain minimum standards for program administration and opera-

tion and spend the funds for the purposes for which they were appropriated.

Regional dental consultants and their staffs in the regional offices of the Public Health Service work with state and local dental personnel in joint consideration of dental public health programs.

In 1935 there were only 18 state health departments with dental projects. The number increased to 35 by 1940 and to 39 by 1946. Today all states but one, Arizona, have provision for state dental public health programs. These state programs conducted educational activities, promoted and organized local dental programs, and provided dental consultation service to local health departments, private dentists, dental hygienists, physicians, nurses and others. Many states conducted surveys of selected population groups to determine the influence of various factors on dental health. In a few instances, by financial assistance or by supplying personnel, state health departments provided special dental services to limited groups.

The total expenditure for state dental programs budgeted for the 1954-1955 fiscal year was $2,133,443. Of this amount about 42 per cent came from grant-in-aid programs administered by the Public Health Service and the Children's Bureau.

The lack of adequate funds is a major deterrent to development of state dental programs. There are many constructive purposes to which additional grant funds could be devoted.

U.S. Public Health Service, Washington, D.C.

Role of the public school in planning dental programs in Philadelphia

Abram Cohen. *J.School Health* 27:117-118 April 1957

The dental service of the Board of Public Education in Philadelphia limits its program to examination and prophylaxis, limited topical application of sodium fluoride, and dental health education.

Existing facilities of the Department of Public Health are inadequate to take care of all the dental needs of the public school children. In 1954 a modified incremental care program was inaugurated, treating first the six year old children, handling emergencies and some teen-agers where open appointments permitted. This plan has worked satisfactorily and this year the accumulated dental needs of eight year old children will be met, as will the maintenance needs of children six and seven years old treated the past two years.

Prior to 1954 the dental clinics of the Department of Public Health were in areas not readily accessible for the school nurse. A pilot program is in operation whereby some dental clinics are being established in school buildings. Adequate space for waiting room, darkroom and the operatory, and plumbing and electricity, are supplied at the expense of the School Board, and the Department of Health provides dental equipment, dental supplies and personnel.

Through the Council on Dental Health, minimum standards of treatment have been set. Spot checking of completed dental work is carried on in the different school districts.

The school nurse is responsible for providing an adequate flow of patients to the dental clinics. Through the cooperation of the nursing service, eligible pupils who are six and seven years old are either brought to the clinic by a school nurse or arrangements are made through the parent escort service.

Emphasis has been placed on the elimination of the sale of sweets in school cafeterias and schoolyards by private vendors. Carbonated drinks are no longer sold in any Philadelphia public school. A program to encourage the use of fruits at recess time is effective, promoted by motion pictures, posters and a television program entitled "A sweet tooth can spoil a sweet smile."

Arrangements were made with principals in several districts whereby fruits in season can be ordered by the principal through local wholesale fruit merchants and delivered to the school. The cooperation of the educational department has made this project successful. This program plus the fluoridation of Philadelphia's water supply, in effect since 1954, will do more to increase the percentage of caries free teeth than any other aspect of dental health education.

269 South Nineteenth Street, Philadelphia, Pa.

Doctoral and Masters' dissertations

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In this column each month are listed recent Doctoral and Masters' dissertations of dental interest, accepted by the dental schools or graduate schools in partial fulfillment for advanced degrees. Copies of many of these theses are available from the schools through interlibrary loan.

An electromyographic analysis of the temporal and masseter muscles and determination of interocclusal clearance in cleft palate patients. *Donald Seymour Brown. 1957.* M.S. *University of Michigan.*

Chronic upper respiratory allergy and its relation to dentofacial development. *Angelo J. Rondon. 1956.* M.S. *University of Michigan.*

Compressive strength of dental amalgam as influenced by alloy particle size. *James E. Overberger. 1957.* M.S. *University of Michigan.*

Cephalometric appraisal of two occlusal planes. *Bernard W. Lyon. 1956.* M.S. *University of Michigan.*

Direct-current paths between two electrodes placed on the crowns of extracted human teeth. *James M. Mumford. 1957.* M.S. *University of Michigan.*

The use of methyl methacrylate in the study of collateral circulation following ligation of the facial artery in dogs. *William Liguori O'Connell. 1957.* M.S. *Georgetown University.*

Measurement of tooth movement after periodontal treatment. *Nenita B. Salcedo. 1957.* M.S. *Georgetown University.*

The use of clasps in partial dentures. *Fadil Selman. 1957.* M.S. *Georgetown University.*

Blood loss in oral surgical procedures measured by serial radiochrome blood volume determinations. *Robert Alan Middleton. 1957.* M.S. *Georgetown University.*

The bacteriostatic effect of ammoniacal silver nitrate on carious dentin. *John S. Pike. 1957.* M.S. *University of Nebraska.*

A study of the fatigue characteristics of silver amalgam. *Elvin G. Wilkinson. 1957.* M.S. *University of Nebraska.*

Actinomycosis occurring after oral surgical interventions (Die Aktinomykose als chirurgische Wundinfektion). *Wolfgang Söntgerath. 1955.* DR.MED.DENT. *University of Bonn, Germany.*

Macroglossia muscularis: consideration of the foramens and the causative factors (Über die Makroglossia muscularis: Unter besonderer Berücksichtigung der Foramen und kausalen Genese). *Peter Urbanowicz. 1955.* DR.MED. DENT. *University of Bonn, Germany.*

Plastic surgery on the palate in instances of gunshot injuries of the jaws (Gaumenplastik bei Kieferschussverletzungen). *Gerlind Hoffmeyer. 1954.* DR.MED.DENT. *University of Mainz, Germany.*

The procedure of tooth extraction from the past to the present (Die Verfahren der Zahnentfernung im Wandel der Zeiten). *Werner Kortenkamp. 1955.* DR.MED.DENT. *University of Cologne, Germany.*

Self-curing acrylic resins in dental practice: their applicability as filling materials (Zahnärztliche Kunststoffe und ihre Problematik mit besonderer Berücksichtigung selbsthärtender Füllungsmaterialien). *Franz Josef Bertram. 1956.* DR.MED. DENT. *Medical Academy of Düsseldorf, Germany.*

Investigation of tissue reactions to acrylic resins in animal experiments (Experimentelle Untersuchungen über die Einwirkung zahnärztlicher Kunststoffe auf Gewebekulturen). *Carl Bisping.*

1956. DR.MED.DENT. *Medical Academy of Düsseldorf, Germany.*

Treatment of deforming arthropathy of the temporomandibular joint by prosthetic procedures (Die prothetische Behandlung der Arthropathia deformans der Kiefergelenke). *Hermann Böttger. 1956.* DR.MED.DENT. *Medical Academy of Düsseldorf, Germany.*

The straightening of upper lateral incisors (Ein Beitrag zur Reduktion der oberen seitlichen Schneidezähne). *Ingeborg Sommerlad. 1955.* DR.MED.DENT. *University of Frankfurt/Main, Germany.*

Diagnosis and therapy of 47 fractures of the upper jaw treated at the Dental Clinic of the University of Frankfurt/Main (Untersuchungen zum Bruchgeschehen und zur Therapie an 47 Oberkieferbrüchen aus dem Zahnärztlichen Universitäts-Institut der Stiftung "Carolinum" Frankfurt am Main). *Rüdiger Thümmel. 1955.* DR. MED.DENT. *University of Frankfurt/Main, Germany.*

Implantation of metal substructures in edentulous jaws (Beitrag zur Frage der Implantation von Metallgerüsten bei zahnlosen Kiefern). *Bernd Dieter Tanneberg. 1954.* DR.MED.DENT. *University of Halle/Saale, Germany.*

Histologic examinations of the formation of secondary dentin in strongly abraded human teeth (Histologische Untersuchungen über die Bildung von Sekundärdentin an stark abradierten Zähnen beim Menschen). *Hans Simon. 1955.* DR.MED. DENT. *University of Halle/Saale, Germany.*

Caries incidence in school children of the district of Lüdinghausen (Die Verbreitung der Karies bei Schulkindern des Kreises Lüdinghausen). *Guido Palsherm. 1954.* DR.MED.DENT. *University of Münster, Germany.*

Prosthetic dentistry in the region of the palate: an otorhinolaryngologic viewpoint (Die Prothetik im Gaumenbereich: Vom Standpunkt des Hals-Nasen-Ohrenarztes aus). *Friedrich Poelmann. 1954.* DR.MED.DENT. *University of Münster, Germany.*

The bacteriostatic and bactericidal effects of chlorophyll (Über die bakteriostatische und baktericide Wirkung des Chlorophylls). *Kurt Schmidtpott. 1954.* DR.MED.DENT. *University of Münster, Germany.*

Results of dental examinations of 8,179 children and juveniles of the city of Marburg/Lahn from 1954 to 1955 (Ergebnisse zahnärztlicher Untersuchungen bei 8,179 Kindern und Jugendlichen der Universitätsstadt Marburg/Lahn im Schuljahr 1954/1955). *Hannelore Diez/Steinlechner. 1956.* DR.MED.DENT. *University of Marburg/Lahn, Germany.*

Experimental and clinical investigations of the influence of pregnancy on the development of dental caries (Experimentelle und klinische Untersuchungen über den Einfluss der Schwangerschaft auf die Karies der Zähne). *Karl Heinz Dücker. 1956.* DR.MED.DENT. *University of Marburg/Lahn, Germany.*

Chemotherapy in instances of malignant tumors: review of the literature (Die Chemotherapie maligner Tumoren: Literaturzusammenstellung). *Ruta Stanulyte. 1954.* DR.MED.DENT. *University of Tübingen, Germany.*

Damage to tooth structure caused by organic acids (Zahnschädigung durch organische Säuren). *Hans Dammeyer. 1954.* DR.MED.DENT. *University of Würzburg, Germany.*

Necrosis in the hard palate after injection of "Novol" penicillin (Nekrosen am harten Gaumen nach Injektion von "Novol" Penicillin). *Josef Kessler. 1955.* DR.MED.DENT. *University of Basel, Switzerland.*

Oroantral fistula resulting from tooth extraction: etiology, treatment and prognosis (Oroantralfistel nach Zahnextraktionen: Ihre Aetiologie, Therapie und Prognose). *Rolf Spoerri. 1955.* DR.MED. DENT. *University of Zürich, Switzerland.*

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